COTTAGER'S SELF HELP PROGRAM

ENRICHMENT STATUS OF LAKES IN THE SOUTHEASTERN REGION OF ONTARIO

1982

Ontario
Ministry of the Environment

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Technical Support Section
Ministry of the Environment
Southeastern Region
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ABSTRACT

In 1970, the Ministry of the Environment initiated a program to monitor the trophic status, that is the state of nutrient enrichment, of lakes in Ontario. The very nature of the program required the voluntary assistance of cottagers to take water clarity measurements and water samples, hence the name "Self Help Program". The samples were sent to the MOE Laboratories where they were analysed for algal content as reflected by the quantity of chlorophyll present. In the twelve years which have elapsed since the program began, public involvement has increased dramatically and a significant data base is being compiled. The year of 1982 marks the beginning of a new era of data storage, as the use of computers was phased in to deal more efficiently with the large quantity of data.

The importance of long-term data for any environmental study, in this particular case the study of lake trophic status, cannot be overemphasized. Trends or cycles in water clarity and algal content, clearly related to nutrient input, will only be understood if several years of data are compared, as seasonal and annual variations caused by climate or man's activities complicate the data.

To this end, sampling of lakes continued in 1982, with the addition of some lakes not previously included in the project. Data has been compiled on a lake-by-lake basis to facilitate the study of trends. In general, lakes in the Southeastern Region are in good condition, suitable for recreational uses, though there are some exceptions which have been identified and subjected to further study.

A section of the report entitled "Protection of the Lake" provides cottagers with an outline of methods for protecting the water quality of a lake from deterioration.

ACKNOWLEDGEMENT

The authors of this report, D.L. Galloway, and his assistant Catherine Milne, gratefully acknowledge the participation of the many cottagers and lakeside residents, as well as the staff of the Ministry of Natural Resources and Ministry of the Environment in the Self Help Program during 1982. Significantly concerned about their environment, these people volunteered their time to collect water samples and make water clarity measurements. Their efforts represent a valuable contribution to the understanding of water quality variables in the recreational lakes of this province.

INTRODUCTION

Extensive glacial activity in the relatively recent geologic past has left Ontario with a legacy with some 250,000 inland lakes, not to mention four of the five great lakes on which this Province borders. This legacy represents a tremendously valuable, irreplaceable recreational resource that requires protection if it is to continue relatively unharmed by the demands placed on it by man. Growing affluence, increasing amounts of leisure time, and the accessibility of lakes to centres of urban population in Southern Ontario have placed pressure on the lake systems. Shoreline developments, including both seasonal and permanent residences, have occurred on many lakes; other urban inhabitants enjoy the natural beauty of a lake through the use of campgrounds and resorts. But no environmental resource can be utilized free of charge; there is always some form of payment to be made.

For many Ontario lakes the payment takes the form of eutrophication, a process which in itself is entirely natural, but which can be accelerated by man's activities in the watershed.

For an understanding of eutrophication, an understanding of the role of nutrients and the zones of productivity in a lake is required. A lake can be divided into three areas according to light penetration. The littoral zone is that area where light penetrates to the lake bottom; rooted aquatic plants which depend on nutrients bound in the sediments grow here. The limnetic zone is that portion of the lake which extends down to a maximum depth of light penetration but where light does not strike the lake bottom; in this as well as in the littoral zone, free-floating microscopic plants called phytoplankton (algae) are found. That area of a lake where no sunlight penetrates is the profundal zone; only consumer organisms such as fish are found here. (Figure A)

Algae is considered a primary producer, that is it fixes the radiant energy from the sun, converts it through photosynthesis to stored chemical energy in plant tissue. This energy is then in a form which

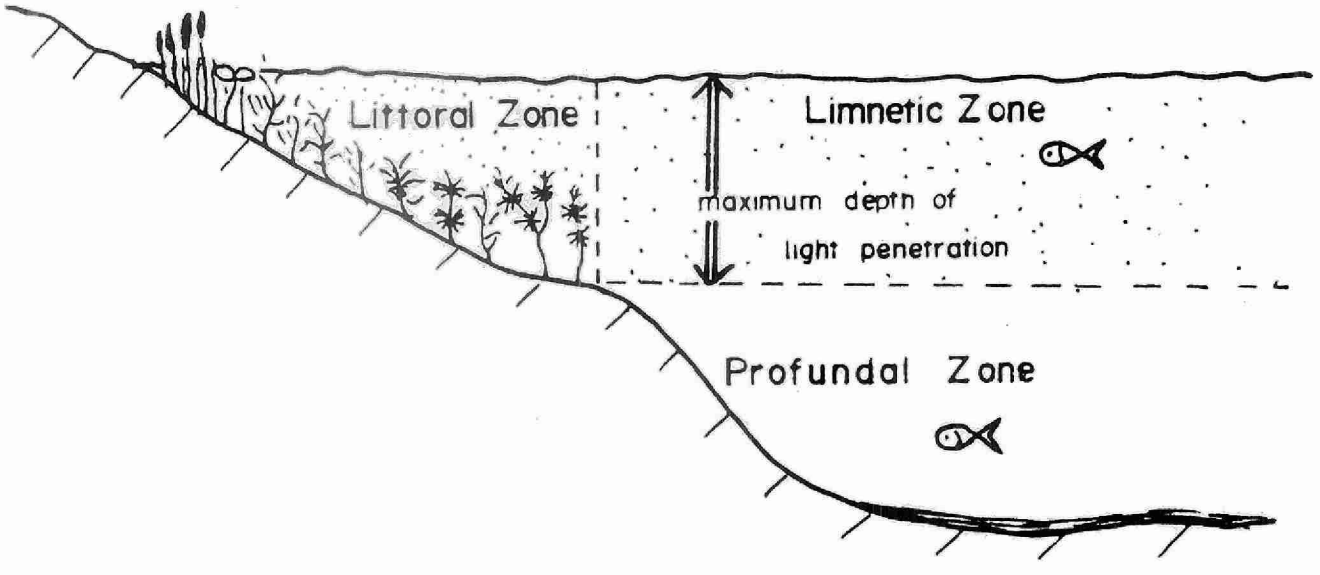


Figure A: Zones of productivity in a lake

can be used as a source of nutrition for consumer organisms all the way up the food chain. The amount of algae being produced is referred to as the primary productivity of the lake. If the limnetic zone is a large portion of the lake volume, as it is in shallow lakes, productivity will be correspondingly high. Deep lakes with a small limnetic zone tend to be less productive, as no algae production occurs within the profundal zone. Productivity can be increased by the addition of nutrients such as phosphorus and nitrogen, which act as fertilizers. Because algae assimilates nutrients dissolved in the water, an increased supply of nutrients will result in greater algal production. Similar increases in weed growth occur.

Both phosphorus and nitrogen are found naturally in the environment, but of the two phosphorus is usually the more important factor affecting trophic status, i.e. productivity of a lake. Because phosphorus is found in smaller quantities and nitrogen is usually in excess, phosphorus is the limiting factor. In other words, the quantity of phosphorus dictates how much plant growth can occur. Phosphorus is chemically bound in bedrock and enters a lake in surface water runoff; nitrogen, which composes 70% of the atmosphere, is fixed by bacteria into nitrates usable by plant life. Nitrogen can enter a lake by surface runoff or precipitation or can be fixed directly by aquatic plants such blue-green algae.

Nutrient inputs are often influenced by man's activities in the watershed. Until the mid-1970's, large quantities of phosphorus entered a lake as many sewage treatment plants did not have the facilities to remove this nutrient. Laundry detergents were the main source of artificially supplied phosphorus to a lake until its content in detergent was limited by law. It is still possible for improperly located septic beds to load significant quantities of phosphorus into the water. Many cottages and lake-side residences are equipped with automatic dishwashers, the detergent for which still contains phosphorus. The percentage phosphorus in these detergents has not been limited by law.

Runoff from agricultural land contains high quantities of the two nutrients resulting from the natural fertility of the land and from the

fertilizers applied by farmers. Artificial fertilizers and manure both contain nitrogen and phosphorus.

Excessive application of fertilizers to farm land or lawns results in nutrient-rich runoff. Any clearing of the land by forestry or forest fires for example, exposes the soil to erosive forces of wind and rain and accelerates nutrient exports to the lake.

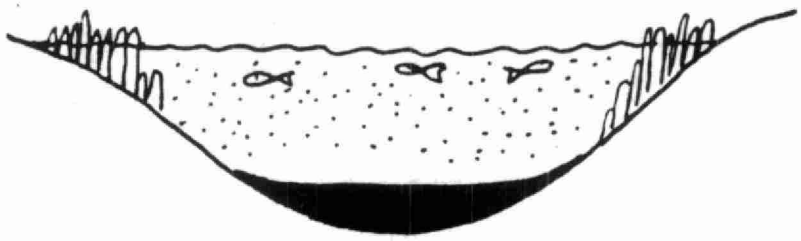
Lakes vary greatly in their sensitivity to nutrient inputs. The rate of nutrient loading, along with lake size, depth and rate at which the waters are renewed, determine the lake's response. A large deep lake or one which exchanges its volume several times a year is not as sensitive as small headwater lakes which accumulate nutrients, or shallow lakes where the zone of algal production is a large proportion of the total volume.

Eutrophication is the term used to describe this process of increasing productivity in a lake. A lake benefits from some increase in productivity as algal and weed growth provides food and shelter for fish and their prey. Excessive eutrophication leads among other things to a deterioration in the recreational capabilities of a body of water, as high algal densities impart a green colour to the water and intense weed growth chokes the shallow areas of the lake. Aesthetics are reduced and the increased productivity interferes with such sports as swimming and boating. When man's activities in the watershed are responsible for increasing nutrient inputs resulting in enrichment or increasing trophic status of a lake, it is termed cultural eutrophication.

One lake classification system is based on a scale of rising trophic status (nutrient enrichment) of a lake. Lakes with few nutrients and a low productivity are oligotrophic. Typically they are deep, crystal clear waters with sandy or rocky bottoms. The other extreme is the nutrient rich, highly productive eutrophic lake, characteristically shallow and weedy with poor water clarity. Eutrophic lakes may be frequently subjected to algal blooms. Intermediate on the scale are mesotrophic lakes, with intermediate productivity and intermediate water clarity. (Figure B)

EUTROPHIC

high nutrient content
high productivity
low oxygen content in bottom waters
high marginal vegetation
fish confined to upper strata



OLIGOTROPHIC

low nutrient content
low productivity
high oxygen content at all depths
limited marginal growth
fish at all depths

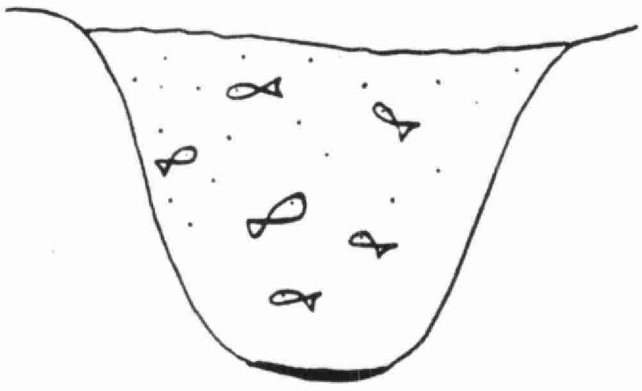


Figure B: Cross sections of two lakes as classified by trophic status. (Relative algal concentrations represented by stipling.)

Nutrient enrichment and the associated increase in productivity can aggravate already existing natural conditions in the lake, such as dissolved oxygen depletion in the lower waters of the lake. In the profundal zone, there is a certain amount of dissolved oxygen which is not replenished during the season because photosynthesis does not occur here. As the summer progresses, algae is produced in the littoral and limnetic zones and dies. This dead plant material sinks to the bottom and the bacterial decomposition process uses up the oxygen supply. A eutrophic lake places higher demands on the oxygen in the lake waters. Reduced dissolved oxygen in bottom waters generally does not affect the recreational quality of the surface waters of a lake. However if species of fish such as lake trout, whitefish and herring which require deep, cold water are present, they may not be able to survive in a lake that completely losses its bottom water oxygen supply over a number of years. Indeed damage to lake trout fisheries is considered one of the most detrimental effects of eutrophication. There are presently 122 lake trout lakes in the South-eastern Region, though historical records document at least 24 others which are now extinct. Of course, other factors besides eutrophication could be responsible, including angling pressure, water level fluctuations, presence of adequate spawning and nursery areas, predation, disease and parasitism. Other non-nutrient-related water quality problems such as acidification can also occur.

A general concern about water quality problems prompted the establishment of the Recreational Lakes Survey Program in 1970 by the Ministry of the Environment to inventory and monitor the condition of many Ontario lakes. Out of this program grew the Self Help Program which draws on the voluntary assistance of cottage associations, individual cottagers and lakeside residents to develop a general data base of two key basic water quality parameters: Secchi disc readings and the chlorophyll concentrations, on a much larger number of lakes. Without this assistance it would be financially and logistically impossible for the Ministry of the Environment to maintain this amount of information on a large number of lakes on a continuing basis.

This report presents water quality data for 76 lakes involved in the 1982 Self Help Program in the Southeastern Region of Ontario. (Table 1) It allows for trophic status assessment of 68 of the lakes for which data exists on at least six occasions during the season. The Southeastern Region includes Hastings, Prince Edward and Renfrew Counties and extends eastward to the Ontario/Quebec border. This year's report also includes data from the Recreational Lakes Survey Program in an attempt to add greater meaning to the Self Help data.

Table 1: Lakes Sampled in 1982 Self Help Program

LAKE	COUNTY(S)	TOWNSHIPS
1. Ashby	Lennox & Addington	Ashby
2. Baptiste	Hastings	Herschel
3. Bark	Renfrew, Hastings Nipissing District	Jones, Bangor, Lyell, Wicklow
4. Bass	Leeds	Rear of Leeds & Lansdowne
5. Beaver	Lennox & Addington	Sheffield
6. Big Gull	Frontenac	Kennebec, Olden, Barrie, Clarendon
7. Black	Frontenac	Olden
8. Black Donald	Renfrew	Brougham
9. Bobs	Frontenac	Bedford
10. Brule (Wensley)	Frontenac	Miller
11. Buck - North Bay	Frontenac	Loughborough, Bedford, Storrington
12. Burridge	Frontenac	Bedford
13. Carson	Renfrew	Jones, Sherwood
14. Charleston	Leeds	Rear of Yonge & Escott, Rear of Leeds & Lansdowne
15. Chippego	Frontenac	Hinchinbrooke
16. Christie	Lanark	Sherbrooke, Bathurst
17. Colton	Renfrew	Admaston
18. Constan (Constant)	Renfrew	Grattan
19. Crosby	Leeds	North Crosby
20. Crow	Frontenac	Oso, Bedford
21. Crowe	Hastings, Peterborough	Marmora, Belmont
22. Dalhousie	Lanark	Dalhousie

LAKE	COUNTY(S)	TOWNSHIPS
23. Davern	Lanark	South Sherbrooke
24. Dempseys (Virgin)	Renfrew	Bagot and Blythfield
25. Desert	Frontenac	Loughborough
26. Devil	Frontenac	Bedford
27. Diamond	Hastings	Herschel
28. Dickey	Hastings	Lake
29. Eagle	Frontenac	Hinchinbrooke
30. Elbow	Frontenac	Hinchinbrooke
31. Faraday (Trout)	Hastings	Faraday
32. Farren (Farrell)	Lanark	South Sherbrooke
33. Gananoque	Leeds	Rear of Leeds & Lansdowne, Front of Leeds & Lansdowne
34. Glanmire	Hastings	Tudor
35. Golden	Renfrew	North Algona
36. Green	Renfrew	Brougham
37. Grippen	Leeds	Rear of Leeds & Lansdowne
38. Gunter	Hastings	Cashel
39. Hay Bay	Lennox & Addington	Fredericksburgh
40. Howes	Frontenac	Portland
41. Indian	Leeds	South Crosby
42. Joeperry	Lennox & Addington	Effingham
43. Limerick	Hastings	Limerick
44. Little Silver	Lanark	South Sherbrooke
45. Loughborough	Frontenac	Storrington, Loughborough
46. Mackie	Frontenac	Miller
47. Mazinaw	Frontenac, Lennox & Addington	Abinger, Barrie

LAKE	COUNTY(S)	TOWNSHIPS
48. Mink	Renfrew	Wilberforce
49. Mississippi	Lanark	Drummond, Beckwith, Ramsay
50. Moira	Hastings	Huntington
51. Mosque	Frontenac	Miller, Clarendon
52. Muskrat	Renfrew	Westmeath, Ross
53. McKay		Regional Municipality of Ottawa-Carleton
54. Norway	Renfrew	Bagot
55. Olmsted (Jefferys)	Renfrew	Ross
56. Opinicon	Frontenac, Leeds	Bedford, Storrington, South Crosby
57. Otter	Leeds	Bastard, South Elmsley
58. Otty	Lanark	North Burgess, North Elmsley
59. Patterson	Lanark	Dalhousie
60. Paugh	Renfrew	Burns, Sherwood
61. Pike	Lanark, Leeds	North Burgess, North Crosby
62. Red Horse	Leeds	Rear of Leeds & Lansdowne
63. Robertson	Lanark	Lavant
64. St. Andrews	Frontenac	Hinchinbrooke
65. St. Peter	Hastings	McLure
66. Salmon Trout	Hastings	Monteagle
67. Sharbot	Frontenac	Olden
68. Sheldrake	Lennox & Addington	Anglesea
69. Silver	Frontenac, Lanark	Oso, South Sherbrooke
70. Skootamatta	Lennox & Addington	Anglesea
71. Sydenham	Frontenac	Loughborough

LAKE	COUNTY(S)	TOWNSHIPS
72. Troy	Leeds	South Crosby
73. Twin Sisters	Hastings	Marmora
74. Upper Rock	Frontenac	Storrington
75. White	Lanark, Renfrew	Darling, Bagot & McNab
76. White	Frontenac	Bedford

METHODS

For recreational lakes the most important and most easily measured water quality parameter is water clarity. Clarity is determined by lowering a Secchi disc vertically into the water; the depths at which it disappears from view is a measure of water clarity. A Secchi disc is a circular steel plate 20 cm (8 inches) in diameter painted white and black in opposing quadrants (Figure C).

Water clarity is affected by the amount of phytoplankton, i.e. microscopic algae, which inhabit a lake. As the amount of phytoplankton increases, the water becomes more turbid and water clarity declines. The amount of algae in a unit of water may be determined by enumerating the number of individual cells or algal colonies present under a microscope. However, this is a slow tedious method. To circumvent the need for the special sampling techniques this requires, a simpler method is employed. The amount of green pigment called chlorophyll a, which is a component of all green plants, is chemically measured. The amount of chlorophyll a in a sample of water is a measure of the amount of phytoplankton in the lake at the time of sampling.

Volunteers who contacted the Ministry of the Environment to assist in the Self Help Program were provided with a sampling device, a Secchi disc, sample bottles and preservatives, return shipping material including submission forms, and detailed sampling instructions. Each participant was assigned a sampling location usually at a central or open water site in the lake. Samplers were instructed to undertake water clarity measurements weekly or bi-weekly during the ice-free season or as they had access to the lake.

Algae ceases to grow in a lake because of insufficient light availability for photosynthesis at a depth approximated by twice the Secchi disc depth. Water samples were collected at the same time as water clarity measurements were made by lowering a narrow-mouthed one litre bottle in a weighted sample bucket to twice the Secchi disc depth measurement, i.e. the lower limit of the zone of phytoplankton growth.

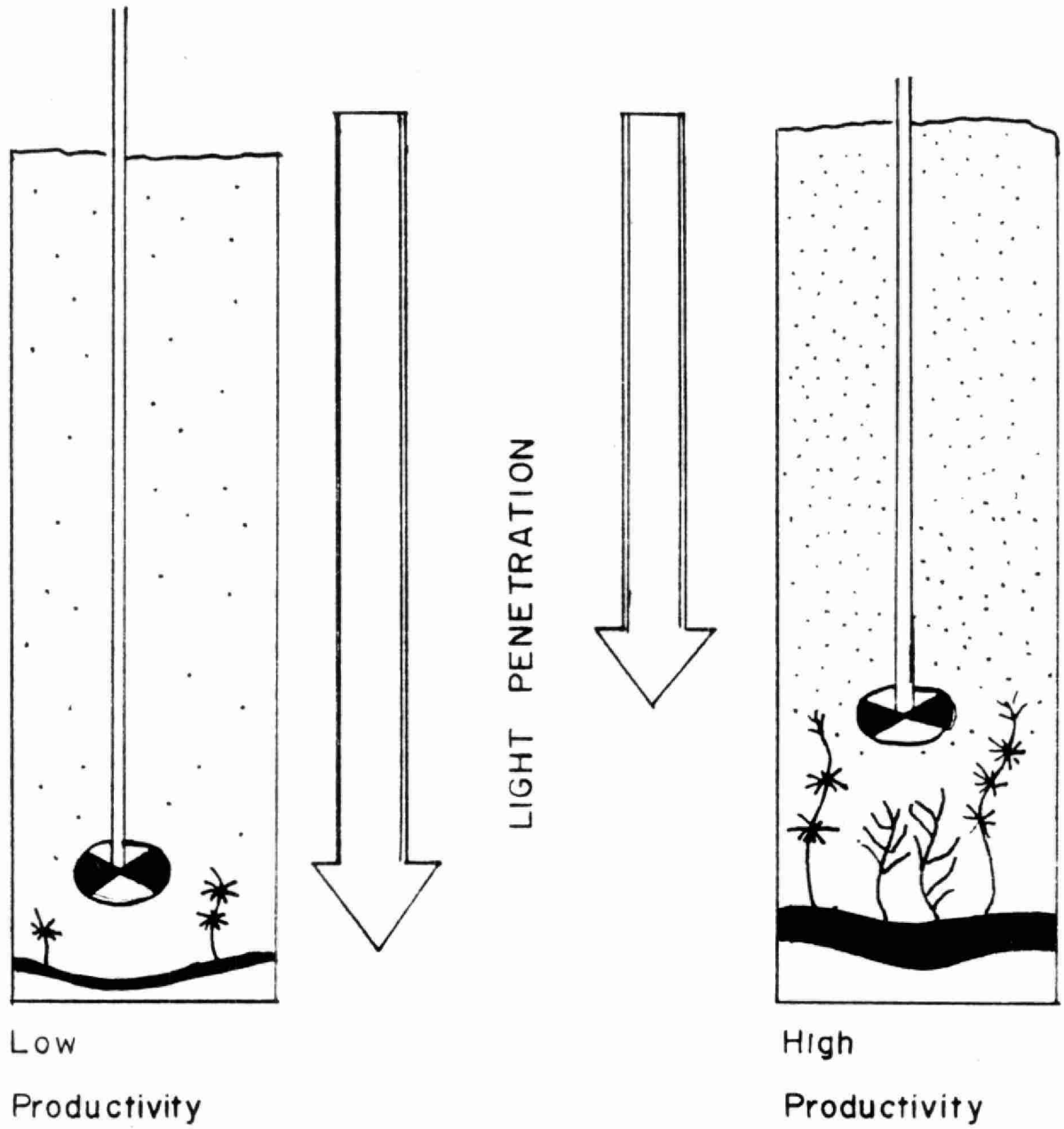


Figure C: Water clarity as measured by a Secchi disc.
Visibility decreases with increased algal densities.

The speed of lowering and raising the sampler was regulated by trial and error repetition so that the bottle just filled as it reached the surface. In this manner a composite sample equally representative of all depths from the measured water column was collected. The samples were preserved immediately after collection with 0.5 ml (five drops) of one half percent magnesium carbonate suspension to minimize degradation of chlorophyll pigment and were delivered as soon as possible, usually within a day or two, to the Ministry of the Environment laboratory via COD shipment.

Water samples were filtered using 1.2 micron filter paper, the residue extracted with 90% acetone and the chlorophyll concentrations determined spectrophotometrically according to standard methods of the Ministry of the Environment's Laboratory Services Branch.

Each sample was submitted with a Sample Submission Form which included information on the sampler and his address, the lake and location sampled, weather and water conditions, as well as Secchi disc depth and depth through which the water sample was taken. This information and the results of the chlorophyll a concentration test were entered into a central computer based data storage facility. The result is a computerized record of all samples received in 1982. For the body of data generated this is the most efficient method of data management.

RESULTS AND DISCUSSIONS

In the 1982 Self Help Program, 100 participants sampled 76 lakes at 108 different stations. Although this represents a reduction in the total number of lakes sampled over 1981, more people participated, and a significant body of data was generated. Of these 76 lakes, 58 were carried on from the 1981 program, nine had been sampled previously in the history of the Self Help Program, and seven were new additions to the list of lakes involved.

Scattered throughout the Southeastern Region of this Ministry, the majority of the lakes are located in the igneous bedrock of an extension of the Precambrian Shield, called the Frontenac Axis, which passes through the Kingston-Gananoque area.

The 76 lakes encompass a wide range of values of characteristics relating to morphology (lake shape), water turnover rate, and watershed characteristics. For example, the surface area of the lakes vary from a minimum of 26 hectares at Crosby Lake, to a maximum area of greater than 3,500 hectares at Bark Lake.

This great variety among the lakes combined with the intent to present more comprehensive data, has resulted in a major change in format of data presentation over the previous years.

The data is arranged by lake (Table 2); included for each lake where the information exists, are some general data on lake morphology: watershed and lake surface areas, maximum depth, volume; and shoreline characteristics: length, number of cottages, permanent residences and resorts, and percentage crown land. The year the cottage count was made may be indicated in brackets. For the resorts, the figure refers to the number of separate resorts; the figure in brackets indicates the total capacity of the resorts and campsites combined. "Prov. Park" or "P.P." identifies those campsites located in provincial parks.

The most recent available water chemistry data for phosphorus, nitrogen, alkalinity and colour are included to aid in the understanding of water quality.

All the summary data play a combined role in determining the productivity of a lake. For example, the size of the watershed relates to the amount of nutrients received by a lake, and the number of cottages may increase the artificially supplied nutrients.

Phosphorus and nitrogen, as discussed earlier in this report, are both fertilizers which stimulate plant growth in the lake. The Ontario Ministry of Environment Guidelines for water quality state that the average total phosphorus concentration determined over the ice-free period, should be less than 20 ug/L to avoid nuisance concentrations of algae. Total phosphorus is a measure of dissolved phosphorus, and phosphorus bound to particles in the water. Nitrogen is measured to give an indication of the amount of nutrients reaching the lake. If the ratio of nitrogen to phosphorus is less than 10:1 it is possible that nitrogen is the limiting factor, that is the nutrient which is determining the quantity of plant growth.

Alkalinity is a measure of the buffering capacity of the lake; it determines the degree to which the lake guards against fluctuations in pH. This index is particularly useful in determining the sensitivity of a lake to acidic inputs as in the case of acid rain. Changes in pH can adversely affect plant and animal life in a lake by creating conditions for which the organism is not adapted, and thus exceeding its tolerance level. The carbonate - bi-carbonate system provides the buffering capacity; thus lakes located in limestone bedrock, composed of carbonates, will have a greater alkalinity than the carbonate-free igneous rocks of the Precambrian shield. For the purposes of this Ministry, lakes with an alkalinity of 0 - 2 mg/L are considered extremely sensitive to acidic inputs, i.e. have a low alkalinity; 2 - 10 mg/L, moderately sensitive; 10 - 25 mg/L, a low sensitivity; greater than 25 mg/L, definitely not sensitive, that is a very high alkalinity.

Colour in lake water results from both organic and inorganic sources. Humic and tannic acids, derived from the decomposition of aquatic and terrestrial plant life, will impart colour to water, as will the inorganic elements of iron and manganese, sometimes found in the bedrock

surrounding and underlying a lake. The figure on the lake sheet is the colour of the lake, measured in Hazen units. Clear lakes may be defined as having colours ranging from 0 - 30 Hazen units; none of the lakes in this study recorded a colour of greater than 50 units. Though high concentrations of colour may affect the aesthetics of lake waters by reducing light penetration, it must be realized that water quality is not affected. It is entirely possible for a tea-coloured lake to have water quality as high as a crystal-clear lake.

At the bottom of each page in the report on lake data, the Secchi depth readings and chlorophyll a concentrations collected for that lake in 1982 are summarized. In some instances two or more stations have been sampled on the same lake. For lakes composed of distinct basins, such as Loughborough and Sharbot Lakes, or those with numerous bays, such as Bobs and Devil Lakes, it is necessary to sample in several locations as each area may act independently in terms of water quality. Large irregularly shaped lakes like Otty or Desert also require several sampling locations as the water clarity and phytoplankton densities may exhibit spatial differences.

Algal growth, as indicated by chlorophyll a concentrations, varies between individual lakes as well as sometimes varying within the history of a given lake. Data from consecutive years is important as it allows long-term trends to be discerned. Of the lakes studied in 1982, 56 have accumulated at least three consecutive years of data.

It is important that caution be taken when comparing seasonal means of collected data. Firstly, the mean must be recognized as only an average value which may obscure periodic extremes. Troy Lake peaked at 20.3 ug/L of chlorophyll a at the end of August in 1982, but the mean chlorophyll a concentration was 5.60 ug/L. The standard deviation indicates how well the mean represents the data set. A large standard deviation, relative to the value of the mean, indicates that the values in the data set encompass a large range, or fluctuated widely, and thus the mean is not particularly representative.

Secondly, lake productivity, particularly in shallow productive lakes, exhibits a seasonality which requires a more frequent and extended sampling schedule than many of the data sets provide. Algal production may peak in the spring and early summer, as in Grippen and Chippego Lakes, or later in the season as shown by maximum productivity and minimum water clarity occurring in the fall in Mississippi and Muskrat Lakes. Sampling which is carried out only during July and August gives no indication of higher productivity and lower water quality which may occur prior to or following the summer months. For this reason, data sets with a consistent record from May through to September or October most accurately depict the trophic status of the lake. Patterson Lake has the most complete record in 1982, with samples taken regularly from May 9 to October 31. Lakes with less than six sets of measurements should not be used for comparison purposes at all.

Annual variations may be the result of variations in climatic factors such as temperature and rainfall. Variations may also be caused by changing cultural activities in the watershed; the new development of cottages on a lakeshore; a substantial increase in the area of farmed land in the watershed; disruption of the soil and release of nutrients into runoff water following clearing of a forest; or changes made to sewage disposal methods.

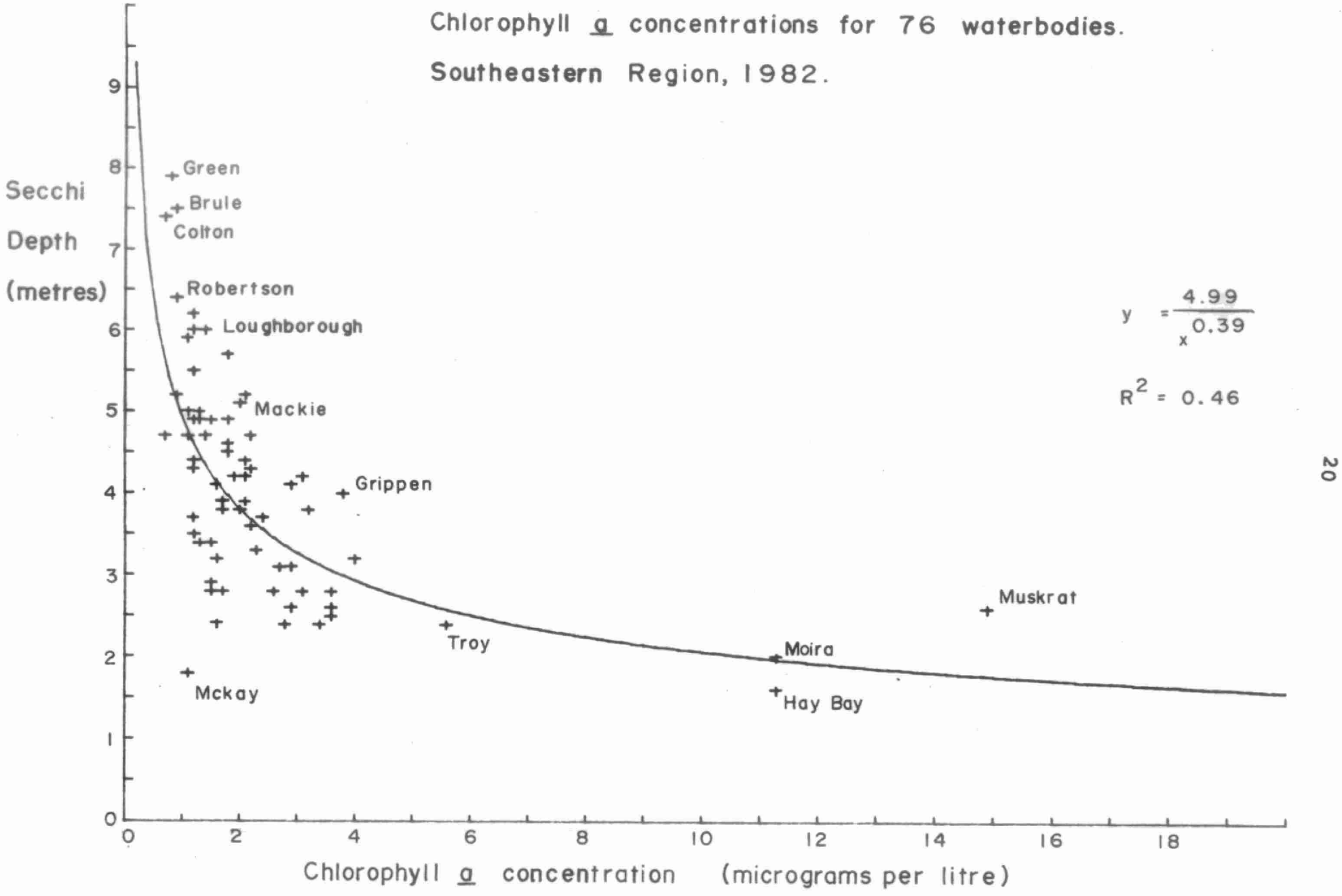
Mean Secchi disc visibilities ranged from a minimum of 1.6 metres in Hay Bay to a maximum of 7.9 metres in Green Lake. All but 19 stations of 108 had mean Secchi disc readings greater than 3 metres. For safe swimming, water should have a visibility of at least 1.2 metres (four feet) to ensure that submerged objects or swimmers in trouble can be seen, but certainly greater visibility is desirable.

Phytoplankton, which means literally "floating plants", are supported in the water column. The presence of these plants in the water reduces the penetration of light; as phytoplankton density increases, the depth to which light is able to penetrate is reduced, i.e. Secchi disc depth is lessened. Because chlorophyll a concentrations repre-

sent the phytoplankton population, a relationship exists between Secchi disc depths and chlorophyll a concentrations. This curve is shown in Figure D. Lakes such as Muskrat and Hay Bay, which have high chlorophyll concentrations have a correspondingly low Secchi disc readings, and are found on the horizontal arm of the curve. Conversely low chlorophyll a concentrations result in greater visibility in the water and these lakes are found near the vertical arm of the curve. Green, Brule and Colton are examples of this type of lake. The majority of lakes are clustered around the mid-range of the curve and have intermediate values. The scatter of values about the curve indicates that the relationship is not perfect. But it would not be expected to be, as phytoplankton is not the sole factor influencing visibility. In shallow lakes in particular, visibility might be impaired by particles of bottom sediment kept suspended by wave action.

A trophic classification scheme, an attempt to classify lakes according to productivity, requires some quantitative data, which usually includes total phosphorus and nitrogen concentrations, chlorophyll concentrations, Secchi disc depths and/or other water quality parameters. By itself chlorophyll concentration is the most useful criterion, as it is recognized as a parameter which integrates various physical, chemical and biological factors affecting the trophic state of a lake. As in any classification based on a continuous scale divisions are somewhat arbitrary and possibly have a limited geographic applicability.

Figure D: Relationship between mean Secchi disc visibility and mean Chlorophyll a concentrations for 76 waterbodies. Southeastern Region, 1982.



A Ministry of Environment trophic state - chlorophyll a classification scheme is presented below in comparison with criterion used by the United States Environmental Protection Agency and the United States National Academy of Science.

Trophic Condition vs. Chlorophyll a

Trophic State	Chlorophyll a (ug/l)		
	Ontario Ministry of Environment	National Academy of Science	U.S. Environmental Protection Agency
Oligotrophic	0-2	0-4	L7
Mesotrophic	2-4	4-10	7-12
Eutrophic	G4	G10	G12

G = Greater Than
L = Less Than

In the 1982 Self Help Program, seasonal mean chlorophyll concentrations encompassed the entire range of trophic conditions normally encountered, from 0.7 ug/L in Colton Lake, considered oligotrophic, to 14.9 ug/L, in Muskrat Lake, considered to be eutrophic on any of the above scales. It should be remembered however, that this represents the range of trophic conditions that would be expected to occur in Ontario. Some small sloughs in the Canadian Prairies have documented chlorophyll concentrations of 100 to 400 ug/L. Even under the most stringent classification scheme, that used by the Ontario Ministry of the Environment, only five of the 76 lakes, just under 10%, are considered eutrophic. These lakes are Howes, Moira, Muskrat and Troy, and Hay Bay.

The seasonal mean chlorophyll concentration gives some indication of the overall suitability of the lake for recreational purposes. Seasonal means less than 5 ug/L indicate a good water quality throughout the season, suitable for a diversity of recreational pursuits including water contact sports such as swimming or bathing.

A seasonal mean concentration of greater than 10 ug/L usually is demonstrated by a lake with moderate water quality which has experienced an algal bloom sometime during the season. A "bloom" which may occur at any time during the ice free season in a lake, is a sudden short-lived rapid increase in the population density of phytoplankton which impart a green, blue-green or brownish tinge to the water. A bloom results when favourable weather conditions, that is calm, sunny and warm weather, are combined with a large available nutrient supply, and proliferation of algae occurs. Blue-green algae in particular will create a scum on the water, as vacuoles in the algae fill with air and cause the plant to rise to the surface. Blooms affect the recreational and aesthetic attractiveness of the lake for lake oriented activities. Taste and odour problems and filter clogging in domestic supply systems drawing on the lake as a source of water, may result from a bloom. At higher concentrations of algae, some species of fish have a lower survival rate and this results in a shift to less desirable species, from an angling point of view.

Concentrations of greater than 15 to 20 ug/L as a season mean indicate that the high phytoplankton level as measured by chlorophyll, is more severe and persistent than is caused by occasional blooms. Beneficial uses of the lake, both as a place of recreation and a source of domestic water supply, may be chronically limited.

Of the lakes studies in 1982, only Muskrat Lake would fit into that category, with elevated chlorophyll concentrations occurring from mid-July through to September. However, Hay Bay and Moira Lake also experienced prolonged periods of excessive chlorophyll concentrations.

As a result of the 1981 Self Help Data which indicated exceedingly poor water quality, and letters from concerned individuals which confirmed this, an intensive study of Muskrat Lake was conducted in 1982. The results of the study are presently being evaluated, but they would appear to provide evidence of excessive eutrophication being caused by high nutrient inputs from agricultural lands in the watershed.

An apparent sudden improvement in the quality of Glanmire Lake is probably due to the sampling period beginning earlier in the season and ending in mid-September. During 1981 a bloom developed in late September and caused chlorophyll concentrations and Secchi disc readings to be higher and lower respectively than in 1982. It is entirely possible that a similar bloom occurred in 1982 after the sampling ended.

In many cases the data appears to reinforce an overall slight improvement in water quality as determined by the Self Help Program, since 1980. Redhorse, St. Andrews, Burridge, Buck and Salmon Trout all demonstrate this tendency toward improvement and all were sampled during approximately the same time frame over the years. Other fluctuations are minor and can be attributed to climatic fluctuations or variations in sampling intervals.

CONCLUSIONS AND RECOMMENDATIONS

The 1982 information on water clarity and phytoplankton levels obtained through the cottagers' Self Help Program substantiates the evidence from previous years: the majority of inland lakes in the Southeastern Region have excellent water quality for recreational purposes. There are a few lakes where excessive chlorophyll concentrations would indicate advancing eutrophy; associated increases in algae growth among other affects of eutrophication may interfere with the recreational use of a lake. The productivity of these lakes is, in most cases, a result of the fertility of the surrounding land area from which drainage and runoff is received.

One of the ongoing purposes of this study is to attempt to determine whether any trends towards advancing or decreasing eutrophication are occurring. Though a large percentage of the lakes involved in the Self Help Program have several consecutive years of accumulated data, few have been studied long enough to determine their year to year or even decade to decade variability. It is difficult to determine whether three, five or more consecutive years of measurement represent expected fluctuations about a stable long-term average condition or whether gradual shift in trophic levels are occurring. The ability to identify these trends is extremely important. It allows the evaluation of the effectiveness of preventive measures taken to protect the lake, such as restrictive land use zoning or conditions imposed on waterfront development. An overall understanding of a lake's water quality and the existence of any trends allows meaningful review of waterfront development proposals and prediction of potential impacts. This represents a first step in formulating a comprehensive long-term lake management strategy.

The most useful method of increasing this understanding of water quality is to continue to monitor the water quality parameters of Secchi disc depths and chlorophyll a concentrations. Not only must this data collection continue from year to year. For the most meaningful interpretation, data is required at intervals throughout the ice-free season of a lake.

Without the volunteer assistance of the public in the acquisition of water samples and field data through the Self Help Program, the Ministry would be unable to maintain such an extensive survey on a continuing basis. To this end, participants in the 1982 Self Help Program are asked to consider continuing their involvement in 1983; furthermore they are asked to inform cottagers, on their own and other lakes, of the program in an attempt to increase participation. The Ministry of the Environment welcomes the inclusion of lakes not presently enrolled in the program. Not only does the Self Help Program generate information pertaining to the trophic status of a lake, it also provides an opportunity for cottagers and indeed all people who make recreational use of a lake, to understand the causes and effects of eutrophication. For further information and assistance in establishing a Self Help Program write to:

Self Help Program
Ontario Ministry of the Environment
133 Dalton Avenue, Box 820
KINGSTON, Ontario
K7L 4X6
Tel: (613) 549-4000

Table 2: 1982 Self Help Data

Lake Sheets

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Ashby LAKE	Lennox & Addington COUNTY	Ashby TOWNSHIP(S)

Watershed Area:	36.82	km^2	Shoreline :	20.3	km
Surface Area :	259	ha	Cottages :	84	
Maximum Depth:	36.6	m	Resorts :	0	
Volume :	31.11	$\times 10^6 m^3$	% Crown Land :		

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	: 5	Alkalinity (mg/l)	10.1
Total Nitrogen (µg/l)	: 293	Colour	5

	1982	1981	1980	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	5.9	5.6	5.9	5.6	6.4	6.8	6.3				
Min. Secchi (m)	5.0	3.9	4.6	3.7	5.8	5.8	5.3				
Mean Chloro. (µg/l)	1.1	1.2	1.7	1.4	1.5	1.3	1.2				
Max. Chloro. (µg/l)	1.4	1.7	2.3	2.2	2.8	2.7	1.6				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 24	5.8	1.1			
June 13	5.2	1.1			
June 27	5.8	1.3			
July 13	5.0	0.9			
Aug. 11	5.5	1.4			
Aug. 15	6.1	1.3			
Sept. 5	5.5				
Sept. 11	7.3	1.2			
Oct. 3	7.0	0.8			
Mean	5.91	1.14			
Std. dev.	0.78	0.21			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Baptiste LAKE | Hastings COUNTY | Herschel TOWNSHIP(S)

Watershed Area:	717	km^2	Shoreline :	62	km
Surface Area :	2125	ha	Cottages :	506	
Maximum Depth:	31.4	m	Resorts :	15 (113)	
Volume :	112.73	$\times 10^6$ m^3	% Crown Land :	50	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	:	11	Alkalinity (mg/l)	10.6
Total Nitrogen (µg/l)	:	287	Colour	12

	1982[1]	1981	1980	1979	1978	1977[2]	1976[1]	1975	1974[1]	1973	1972
Mean Secchi (m)	3.6	4.0	3.5	4.5	4.3	4.0	3.3	3.2	3.4		
Min. Secchi (m)	3.2	2.7	3.1	3.7	3.5	3.2	3.0	2.4	2.2		
Mean Chloro. (µg/l)	1.6	2.6	3.0	1.8	1.6	2.0	2.1	2.1	0.4		
Max. Chloro. (µg/l)	1.7	8.6	7.5	3.6	3.1	4.0	2.6	2.7	0.5		

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
NE Basin			SW Basin		
Aug. 3	3.5	1.7	Aug. 3	3.2	1.3
Aug. 15	4.1	1.5	Aug. 15	3.5	1.7
Mean	3.8	1.6		3.35	1.5
Std. dev.	0.42	0.14		0.21	0.28

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bark LAKE	Renfrew, Hastings COUNTY	Jones TOWNSHIP(S)

Watershed Area:	2722	km^2	Shoreline :	90	km
Surface Area :	3799	ha	Cottages :	25	
Maximum Depth:	87.5	m	Resorts :	2 (135)	
Volume :	3324	$\times 10^6$ m^3	% Crown Land :	75	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	:	10	Alkalinity (mg/l)	4.1
Total Nitrogen (µg/l)	:	271	Colour	12

	1982	1981	1980[1]	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	3.7	4.1	4.6			5.7					
Min. Secchi (m)	2.7	3.3	3.0			4.5					
Mean Chloro. (µg/l)	1.2	1.3	1.5			1.0					
Max. Chloro. (µg/l)	1.9	1.8	1.9			1.9					

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 7	3.4	0.8			
June 14	3.2	1.0			
June 27	3.6	0.8			
July 11	2.7	0.9			
July 26	3.1	1.3			
Aug. 8	2.6	1.7			
Aug. 23	4.4	1.9			
Sept. 7	5.2	1.0			
Sept. 20	4.4	1.0			
Oct. 4	4.7	1.6			
Mean	3.73	1.20			
Std. dev.	0.89	0.40			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bass	Leeds	Rear of Leeds & Lansdowne
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	12.7	km^2	Shoreline	:	11.0 km
Surface Area :	290	ha	Cottages	:	238
Maximum Depth:	22.6	m	Resorts	:	1 (53)
Volume :	23.9	$\times 10^6$ m^3	% Crown Land	:	0

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	:	12	Alkalinity (mg/l)	83
Total Nitrogen (µg/l)	:	399	Colour	6

	1982	1981	1980[2]	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	6.0	5.9	5.1	4.7	5.9	6.6					
Min. Secchi (m)	4.6	4.6	3.5	4.0	4.9	4.9					
Mean Chloro. (µg/l)	1.2	1.7	2.7	1.7	1.5	1.0					
Max. Chloro. (µg/l)	2.3	2.8	4.1	2.2	2.6	1.5					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 27	4.6	1.2			
July 18	5.2	0.7			
Aug. 3	5.5	2.3			
Aug. 15	5.8	1.3			
Aug. 29	6.1	1.7			
Sept. 6	6.1	1.6			
Sept. 12	6.4	0.7			
Sept. 26	7.0	0.9			
Oct. 10	7.0	0.6			
Oct. 17	6.7	0.8			
Mean	6.04	1.18			
Std. Dev.	0.78	0.55			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Beaver LAKE	Lennox & Addington COUNTY	Olden TOWNSHIP(S)

Watershed Area:	534	km^2	Shoreline	:	km
Surface Area :	280	ha	Cottages	:	144 (1976)
Maximum Depth:	6.1	m	Resorts	:	1 (10)
Volume :	9.2	$\times 10^6$ m^3	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	23	Alkalinity (mg/l)	53
Total Nitrogen (µg/l)	:	474	Colour	22

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.3	4.0						2.8	2.4		
Min. Secchi (m)	2.6	3.4						1.8	1.6		
Mean Chloro. (µg/l)	2.3	1.1						4.3	3.2		
Max. Chloro. (µg/l)	3.6	1.8						8.6	7.5		

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
N. Beaver					
July 4	2.6	2.3			
July 21	2.7	3.6			
July 29	3.5	1.0			
Aug. 4	4.0	1.0			
Aug. 11	3.4	3.2			
Aug. 16	3.4	2.9			
Mean	3.27	2.33			
Std. dev.	0.53	1.12			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Beaver	Lennox & Addington	Sheffield
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	534	km^2	Shoreline	:	km
Surface Area :	280	ha	Cottages	:	143
Maximum Depth:	6.10	m	Resorts	:	1 (10)
Volume :	9.2	$\times 10^6$ m^3	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	23	Alkalinity (mg/l)	53
Total Nitrogen (µg/l)	:	474	Colour	22

	1982	1981	1980	1979	1978	1977	1976[1]	1975[2]	1974	1973	1972
Mean Secchi (m)	3.1	3.3					3.0	2.8			
Min. Secchi (m)	2.8	2.7					2.3	2.0			
Mean Chloro. (µg/l)	2.9[1]	2.2					5.0	4.6			
Max. Chloro. (µg/l)	3.7[1]	4.2					5.2	11.0			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
S. Beaver					
July 14	2.8				
July 21	2.8	3.0			
July 29	2.8				
Aug. 4	3.4	1.5			
Aug. 11	3.4	3.7			
Aug. 16	3.5	3.4			
Mean	3.12	2.90			
Std. Dev.	0.35	0.98			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Big Gull	Frontenac	Kennebec, Olden Barrie, Clarendon
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	137	km^2	Shoreline	:	89 km
Surface Area :	236	ha	Cottages	:	280 (1974)
Maximum Depth:	26	m	Resorts	:	10 (156)
Volume :	91.97	$\times 10^6$ m^3	% Crown Land	:	25

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	15	Alkalinity (mg/l)	28
Total Nitrogen (µg/l)	:	401	Colour	20

	1982	1981	1980[1]	1979[1]	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.9		3.7	4.1	4.6	4.6	4.6	3.4			
Min. Secchi (m)	1.7		3.7	3.2	3.8	3.7		2.3			
Mean Chloro. (µg/l)	1.7		2.7	2.0	2.0	2.0	2.1	3.3			
Max. Chloro. (µg/l)	2.6		2.7	2.5	4.7	3.2		5.9			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 20	1.7	1.5			
July 26	3.5	2.0			
Aug. 6	3.5	1.4			
Aug. 11	3.2	2.4			
Aug. 24	3.8	2.1			
Aug. 29	4.9	2.6			
Sept. 6	3.4	1.6			
Sept. 12	5.2				
Sept. 24		1.0			
Sept. 26	4.6	1.2			
Oct. 17	5.2	0.8			
Mean	3.90	1.66			
Std. dev.	1.09	0.60			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Black LAKE | Frontenac COUNTY | Olden TOWNSHIP(S)

Watershed Area:	4.61	km^2	Shoreline :	3.6	km
Surface Area :	40	ha	Cottages :	22 (1974)	
Maximum Depth:	21.0	m	Resorts :	1(6) + 191	Prov. Park sites
Volume :		$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980[1]	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.7	5.1	4.7	5.2	4.9	5.0	4.2				
Min. Secchi (m)	4.3	4.6	3.3	4.9	4.3	3.4	3.1				
Mean Chloro. (µg/l)	1.4	1.7	2.1	1.5	1.6	1.3	1.4				
Max. Chloro. (µg/l)	2.1	2.6	3.8	2.3	2.6	3.1	2.1				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 2	4.3	1.4			
June 16	4.3	2.1			
June 30	5.2	0.7			
July 14	5.2	0.9			
July 28	4.9	1.6			
Aug. 11	4.6	1.4			
Aug. 25	4.3	1.5			
Mean	4.69	1.37			
Std. dev.	0.41	0.46			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Black Donald LAKE		Renfrew COUNTY		Brougham TOWNSHIP(S)	
Watershed Area:	7393	km^2	Shoreline :		km
Surface Area :	1550	ha	Cottages :	103	
Maximum Depth:	44	m	Resorts :	2 (102)	
Volume :		x 10^6 m^3	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l)	:	12	Alkalinity (mg/l)	32
Total Nitrogen (µg/l)	:	311	Colour	14

	1982[1]	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.9				4.2						
Min. Secchi (m)	4.7				2.0						
Mean Chloro. (µg/l)	2.0				2.2						
Max. Chloro. (µg/l)	2.8				3.5						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Aug. 15	4.9	1.2			
Aug. 25	4.9	2.0			
Aug. 29	4.7	1.9			
Sept. 6	5.0	2.8			
Mean	4.88	1.98			
Std. dev.	0.12	0.66			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bob's (Buck Bay) LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:	15	km²	Shoreline :		km
Surface Area :	166	ha	Cottages :	87	
Maximum Depth:	14	m	Resorts :	0	
Volume :		$\times 10^6$ m³	% Crown Land :		

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	21	Alkalinity (mg/l)	45
Total Nitrogen (µg/l)	:	438	Colour	15

	1982[1]	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972[2]
Mean Secchi (m)	4.8	5.4	3.7	3.6	3.4	3.8	4.8	3.7			3.9
Min. Secchi (m)	4.6	4.3	3.0	2.9	3.0	2.6	3.4	2.4			
Mean Chloro. (µg/l)	1.5	2.3	4.5	3.3	3.0	3.5	2.6	4.8			2.8
Max. Chloro. (µg/l)	1.8	2.9	9.6	6.4	4.4	5.2	6.3	7.5			

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 27	4.6	1.5			
July 4	5.0	1.8			
July 13	5.0	1.7			
Sept. 2	4.6	0.9			
Mean	4.80	1.48			
Std. dev.	0.23	0.40			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bob's (East Basin) LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:	351.32	km^2	Shoreline :		km
Surface Area :	927	ha	Cottages :	187	
Maximum Depth:	23	m	Resorts :	3 (33)	
Volume :		$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	: 23	Alkalinity (mg/l)	54
Total Nitrogen (µg/l)	: 500	Colour	10

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972[2]
Mean Secchi (m)	4.2	3.6						5.0			4.1
Min. Secchi (m)	2.9	2.2						3.6			
Mean Chloro. (µg/l)	3.1	2.7						2.7			3.7
Max. Chloro. (µg/l)	5.5	4.0						3.5			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 28	3.9	1.6			
July 5	3.7	2.1			
July 12	2.9	1.3			
July 18	5.0	5.5			
July 26	9.0	2.6			
Aug. 3	3.8	4.3			
Aug. 17	3.6	2.7			
Aug. 19	3.6	4.0			
Aug. 24	3.4	3.9			
Aug. 31	3.0	4.8			
Sept. 26	4.1	1.7			
Mean	4.18	3.14			
Std. dev.	1.69	1.43			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bob's (Green Bay) LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:	22	km^2	Shoreline :		km
Surface Area :	534	ha	Cottages :	106	
Maximum Depth:	26	m	Resorts :	5 (54)	
Volume :		$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1981

Total Phosphorus (µg/l)	:	12	Alkalinity (mg/l)	80
Total Nitrogen (µg/l)	:	411	Colour	7

	1982	1981[2]	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.8	4.7						5.6			
Min. Secchi (m)	2.3	3.0						3.7			
Mean Chloro. (µg/l)	1.7	1.7						2.4			
Max. Chloro. (µg/l)	2.5	2.7						3.4			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Aug. 22	3.2	1.9			
Aug. 29	2.9	1.4			
Sept. 8		2.5			
Sept. 12	3.4	1.1			
Sept. 19	2.4	2.3			
Sept. 26	2.3	0.8			
Mean	2.84	1.67			
Std. dev.	0.48	0.68			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bob's (Long Bay) LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:		km^2	Shoreline	:	km
Surface Area	:	ha	Cottages	:	
Maximum Depth	:	m	Resorts	:	
Volume	:	$\times 10^6 m^3$	% Crown Land	:	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.6	3.9						5.3			
Min. Secchi (m)	2.3	2.4						4.6			
Mean Chloro. (µg/l)	2.9	3.1						2.4			
Max. Chloro. (µg/l)	4.4	4.7						3.7			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 4	2.4	1.6			
July 17	3.0	1.6			
Aug. 2	2.3	4.4			
Aug. 15	3.0	3.0			
Sept. 6	2.4	3.7			
Sept. 26	2.3	3.1			
Mean	2.57	2.90			
Std. dev.	0.34	1.12			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bob's (Mill Bay) LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:	12.51	km^2	Shoreline :		km
Surface Area :	142	ha	Cottages :	16 (1976)	
Maximum Depth:	4.3	m	Resorts :	0	
Volume :		$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	: 30	Alkalinity (mg/l)	64
Total Nitrogen (µg/l)	: 564	Colour	15

	1982[1]	1981[1]	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.0	2.6	2.7					2.8			
Min. Secchi (m)		2.6	2.6					1.8			
Mean Chloro. (µg/l)	0.9	2.4	5.3					4.6			
Max. Chloro. (µg/l)		2.4	13.2					12.0			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 8	2.9	0.9			
July 16	3.2	0.9			
Mean	3.05	0.90			
Std. dev.	0.21	0.00			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Bob's (Mud Bay) LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:	6.11	km^2	Shoreline :		km
Surface Area :	202	ha	Cottages :		160 + 15 houses
Maximum Depth:	7.3	m	Resorts :		4 (62)
Volume :	6.4	$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	19	Alkalinity (mg/l)	62
Total Nitrogen (µg/l)	:	421	Colour	5

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.2	2.9	3.5			3.8	3.5	4.0			
Min. Secchi (m)	2.0	1.8	2.1			3.2	2.9	2.4			
Mean Chloro. (µg/l)	4.0	4.0	4.9			2.5	4.0	5.1			
Max. Chloro. (µg/l)	7.4	9.1	9.6			4.2	7.6	11.0			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 20	3.4	1.6			
Aug. 4	4.0	3.6			
Aug. 16	4.0	7.4			
Sept. 8	2.6	4.4			
Sept. 28	2.0	3.0			
Oct. 19	3.5	___			
Mean	3.25	4.00			
Std. dev.	0.80	2.16			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Brule (Wensley) LAKE		Frontenac COUNTY		Miller TOWNSHIP(S)	
Watershed Area:	52.79	km^2	Shoreline :	26.6	km
Surface Area :	571	ha	Cottages :	85	
Maximum Depth:	56.4	m	Resorts :	2 (3)	
Volume :	126.65	$\times 10^6$ m^3	% Crown Land :	35	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	: 10	Alkalinity (mg/l)	44
Total Nitrogen (µg/l)	: 269	Colour	< 7

	1982	1981	1980	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	7.5	7.3	6.8	6.5			7.7				
Min. Secchi (m)	6.8	6.4	6.2	5.5			4.0				
Mean Chloro. (µg/l)	0.9	1.2	1.4	1.2			1.9				
Max. Chloro. (µg/l)	1.3	2.4	2.2	1.9			5.0				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 26	7.3	0.7			
July 3	8.2				
July 5	8.1	0.6			
July 13	8.1	0.8			
July 24	7.6	0.8			
July 25	7.5	0.7			
Aug. 3	7.3				
Aug. 28	7.0	1.3			
Aug. 29	6.8	1.3			
Sept. 4	7.3				
Sept. 5	6.9	0.9			
Mean	7.46	0.89			
Std. dev.	0.49	0.27			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Buck (North Bay)	Frontenac	Loughborough, Bedford, Storrington
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	8.34	km^2	Shoreline	:	km
Surface Area :	276	ha	Cottages	:	77 (1976)
Maximum Depth:	32	m	Resorts	:	1 (25)
Volume :		x 10^6 m^3	% Crown Land	:	10

WATER CHEMISTRY 1979

Total Phosphorus (µg/l)	:	13	Alkalinity (mg/l)	35
Total Nitrogen (µg/l)	:	356	Colour	7

	1982	1981	1980	1979	1978	1977	1976[1]	1975[2]	1974	1973	1972
Mean Secchi (m)	3.9	4.1	3.8	3.0	3.9	3.5	3.2	4.3			
Min. Secchi (m)	3.2	3.0	3.4	2.6	3.2	3.0	2.3	3.1			
Mean Chloro. (µg/l)	2.1	2.4	3.1	3.7	3.3	2.3	3.5	2.6			
Max. Chloro. (µg/l)	3.9	5.4	4.5	5.7	6.1	3.2	4.6	4.0			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)
#1		
May 12	2.3	0.7
May 27	4.7	2.6
June 9	4.4	1.6
June 18	4.7	3.3
July 5	4.7	1.8
July 15	4.4	2.0
July 22	4.4	2.5
July 28	3.2	1.7
Aug. 3	3.5	2.7
Aug. 27	3.2	2.5
Sept. 6	3.2	3.8
Sept. 12	3.2	1.5
Mean	3.82	2.22
Std. dev.	0.81	0.85

Date	Secchi (m)	Chloro. (µg/l)
#2		
May 1	3.4	
May 30	4.9	1.3
June 20	4.0	1.9
July 1	4.9	1.0
July 14	4.6	1.6
July 16	4.3	1.6
July 20	4.0	1.3
July 25	3.4	1.9
July 29	3.7	2.6
Aug. 2	3.7	1.7
Aug. 11	3.3	2.2
Aug. 13	3.4	2.2
Aug. 15	3.6	2.4
Aug. 24	4.0	3.9
Sept. 12	3.7	2.6
Oct. 4	4.0	1.5
Oct. 10	4.3	1.3
Mean	3.95	1.94
Std. dev.	0.51	0.71

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Burridge LAKE		Frontenac COUNTY		Bedford TOWNSHIP(S)	
Watershed Area:	4.53	km^2	Shoreline :	6.9	km
Surface Area :	81	ha	Cottages :	47 (1974)	
Maximum Depth:	16.2	m	Resorts :		
Volume :		x 10^6 m^3	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.7	4.4	4.5								
Min. Secchi (m)	4.0	3.0	3.0								
Mean Chloro. (µg/l)	0.7	1.7	2.4								
Max. Chloro. (µg/l)	1.2	3.6	4.5								

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 30	4.3	0.8			
June 27	4.7	0.7			
July 3	4.0	0.4			
July 11	4.0	0.9			
July 25	4.3	1.2			
Sept. 11	4.5	0.5			
Sept. 19	5.6				
Sept. 26	5.7	0.7			
Oct. 9	5.3	0.7			
Oct. 14	5.0	0.6			
Mean	4.74	0.72			
Std. dev.	0.63	0.23			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Carson LAKE	Renfrew COUNTY	Jones, Sherwood TOWNSHIP(S)

Watershed Area:	25.9	km^2	Shoreline	:	9.7 km
Surface Area :	273	ha	Cottages	:	69 + 10 houses
Maximum Depth:	44.5	m	Resorts	:	2 (16)
Volume :	33.5	$\times 10^6 m^3$	% Crown Land	:	30

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	:	10	Alkalinity (mg/l)	11.9
Total Nitrogen (µg/l)	:	201	Colour	8

	1982[1]	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	5.2	5.8	5.3	5.7	6.2	6.3					
Min. Secchi (m)		5.2	4.6	4.9	5.5	4.6					
Mean Chloro. (µg/l)	1.2	1.4	2.0	1.8	1.9	1.3					
Max. Chloro. (µg/l)		2.1	3.5	2.3	3.0	1.7					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 5	5.2	1.2			
Mean	5.2	1.2			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Charleston: Big Water — Leeds — Rear of Leeds & Lansdowne, Front/Rear of Yonge & Escott

LAKE — COUNTY — TOWNSHIP(S)

Watershed Area:	300	km^2	Shoreline	:	152 km
Surface Area :	2517	ha	Cottages	:	627 + 63 houses
Maximum Depth:	91	m	Resorts	:	3(40)+227 PP units
Volume :	437	$\times 10^6$ m^3	% Crown Land	:	20

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	20	Alkalinity (mg/l)	78
Total Nitrogen (µg/l)	:	418	Colour	5

	1982	1981	1980	1979	1978	1977	1976[1]	1975[2]	1974	1973	1972
Mean Secchi (m)	3.9	3.8	4.1	3.5	3.7	4.0	3.9	4.4			
Min. Secchi (m)	3.0	3.0	2.7	2.4	3.0	2.4	3.7	3.1			
Mean Chloro. (µg/l)	3.3	3.9	2.6	2.7	2.2	2.3	4.0	2.9			
Max. Chloro. (µg/l)	4.8	5.9	6.7	4.0	3.2	2.9	7.9	3.8			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 14	3.4	3.6			
June 20	3.5	3.5			
June 27	4.3	2.4			
July 5	4.9	2.9			
July 12	4.7	3.0			
July 19	3.5	2.3			
July 26	4.7	4.3			
Aug. 3	4.0	3.7			
Aug. 9	3.7	3.3			
Aug. 16	3.8	2.8			
Aug. 23	3.0	4.2			
Aug. 30	3.3	4.8			
Sept. 7	3.4	1.8			
Mean	3.86	3.28			
Std. dev.	0.61	0.86			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

LAKE	COUNTY	TOWNSHIP(S)
Charleston: Deep Water	Leeds	Rear of Leeds & Lansdowne, Front/Rear of Yonge & Escott

Watershed Area:	300	km^2	Shoreline	:	152 km
Surface Area :	2517	ha	Cottages	:	627 + 63 houses
Maximum Depth:	91	m	Resorts	:	3(40)+227 PP units
Volume :	437	$\times 10^6$ m^3	% Crown Land	:	20

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	22	Alkalinity (mg/l)	93
Total Nitrogen (µg/l)	:	430	Colour	5

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	4.0	3.6	4.3	3.7	3.7	4.0	3.8	4.4			
Min. Secchi (m)	2.7	3.0	3.2	1.8	3.0	2.6	3.2	3.0			
Mean Chloro. (µg/l)	3.2	4.2	2.4	2.4	2.3	2.2	3.8	3.0			
Max. Chloro. (µg/l)	4.6	6.3	4.9	4.0	3.2	3.1	6.7	4.1			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 14	3.4	3.1			
June 20	4.3	3.5			
June 27	4.6	2.8			
July 5	5.0	2.4			
July 12	4.7	2.4			
July 19	4.3	2.2			
July 26	4.3	4.3			
Aug. 3	3.7	3.4			
Aug. 9	4.6	4.6			
Aug. 16	4.1	3.4			
Aug. 23	3.4	3.8			
Aug. 30	3.3	4.2			
Sept. 7	2.7	1.9			
Mean	4.03	3.23			
Std. dev.	0.68	0.86			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Charleston: Goose Island Leeds Rear of Leeds & Lansdowne, Front/Rear of Yonge & Escott

LAKE COUNTY TOWNSHIP(S)

Watershed Area:	302.45	km^2	Shoreline	:	152.2 km
Surface Area :	2517	ha	Cottages	:	627 + 63 houses
Maximum Depth:	91.1	m	Resorts	:	
Volume :	437.0	$\times 10^6$ m^3	% Crown Land	:	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.1	3.6	4.2	4.2	3.9						
Min. Secchi (m)	3.0	3.2	3.2	3.7	3.5						
Mean Chloro. (µg/l)	2.3	3.3	2.3	2.1	1.9						
Max. Chloro. (µg/l)	3.2	4.0	4.7	2.9	3.3						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 21	3.7	1.8			
July 5	5.3	1.5			
July 12	3.7	2.6			
July 19	4.1	2.0			
July 26	4.9	2.3			
Aug. 2	4.0	2.3			
Aug. 16	3.8	2.4			
Aug. 23	3.0	3.2			
Mean	4.06	2.26			
Std. dev.	0.73	0.52			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Charleston: Webster Bay Leeds Rear of Leeds & Lansdowne, Front/Rear of Yonge & Escott

LAKE COUNTY TOWNSHIP(S)

Watershed Area:	302.45	km^2	Shoreline	:	152.2 km
Surface Area :	2517	ha	Cottages	:	627 + 63 houses
Maximum Depth:	91.1	m	Resorts	:	
Volume :	437.0	$\times 10^6 m^3$	% Crown Land	:	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.4	3.7	4.4	4.4	3.9	3.6					
Min. Secchi (m)	3.2	3.2	3.4	3.7	3.4	2.9					
Mean Chloro. (µg/l)	2.5	3.5	2.6	2.1	2.2	2.2					
Max. Chloro. (µg/l)	3.5	4.4	5.7	2.9	3.1	4.4					

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 21	4.3	2.6			
July 5	5.9	2.3			
July 12	4.6	2.0			
July 19	4.3	2.1			
July 26	5.2	3.5			
Aug. 2	4.1	1.7			
Aug. 16	4.0	2.6			
Aug. 23	3.2	3.2			
Mean	4.45	2.50			
Std. dev.	0.81	0.61			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Charleston (Western Water)	Leeds	Rear of Leeds & Lansdowne
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	302.45	km^2	Shoreline	:	152.2 km
Surface Area :	2517	ha	Cottages	:	627 + 63 houses
Maximum Depth:	91.1	m	Resorts	:	
Volume :	437.0	$\times 10^6$ m^3	% Crown Land	:	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.5	3.8	4.3	4.5	4.0						
Min. Secchi (m)	3.0	3.2	3.5	4.0	3.5						
Mean Chloro. (µg/l)	2.6	3.7	2.8	3.1	2.0						
Max. Chloro. (µg/l)	4.3	4.5	6.0	6.8	2.7						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 21	4.1	1.9			
July 5	6.1	2.1			
July 12	4.6	2.2			
July 19	4.6	2.3			
July 26	5.5	4.3			
Aug. 2	4.1	2.9			
Aug. 16	4.1	2.2			
Aug. 23	3.0	3.0			
Mean	4.51	2.61			
Std. dev.	0.95	0.78			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Chippego LAKE		Frontenac COUNTY		Hinchinbrooke TOWNSHIP(S)	
Watershed Area:	11.9	km^2	Shoreline :	7.9	km
Surface Area :	103	ha	Cottages :		
Maximum Depth:	18.3	m	Resorts :		
Volume :		x 10^6 m^3	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	3.1	3.2	3.1	3.1							
Min. Secchi (m)	2.1	2.6	2.4	2.5							
Mean Chloro. (µg/l)	2.7	3.6	5.2	4.0							
Max. Chloro. (µg/l)	5.4	10.0	9.0	6.5							

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 9	2.1	2.5			
May 17	2.7	3.1			
May 24	2.7	3.5			
June 21	2.4	3.0			
June 27	2.6	4.7			
July 4	2.7	3.1			
July 12	3.2	1.2			
July 18	3.0	1.5			
Aug. 2	3.4				
Aug. 8	3.7	2.5			
Aug. 16	3.6	1.8			
Aug. 29	3.3	5.4			
Sept. 8	3.7	3.0			
Sept. 19	3.5	0.6			
Sept. 29	3.7	0.9			
Oct. 5	3.7	3.2			
Mean	3.12	2.67			
Std. dev.	0.53	1.33			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Christie	Lanark	Sherbrooke, Bathurst
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	416	km^2	Shoreline	:	27.4 km
Surface Area :	646	ha	Cottages	:	265
Maximum Depth:	18.3	m	Resorts	:	5 (20)
Volume :	55.17	$\times 10^6$ m^3	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	13	Alkalinity (mg/l)	52.43
Total Nitrogen (µg/l)	:	355	Colour	8

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1971
Mean Secchi (m)	4.2	3.4	4.7	4.4	4.8	4.4	4.3	4.5			7.6
Min. Secchi (m)	3.4	2.9	3.4	2.7	2.4	2.5	2.6	2.7			6.5
Mean Chloro. (µg/l)	1.9	3.2	3.3	4.1	2.8	3.9	2.8	3.1			0.5
Max. Chloro. (µg/l)	3.4	7.1	7.0	8.8	6.9	8.8	6.9	5.8			0.8

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 4	4.6	1.3			
July 18	4.6	1.3			
Aug. 22	4.4	2.4			
Sept. 12	4.4	1.2			
Sept. 26	4.0	1.7			
Oct. 17	3.4	3.4			
Mean	4.23	1.88			
Std. dev.	0.46	0.86			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Colton LAKE		Renfrew COUNTY		Admaston TOWNSHIP(S)	
Watershed Area:	12.60	km^2	Shoreline :	4.67	km
Surface Area :	62	ha	Cottages :	84 + 3	permanent
Maximum Depth:	32.3	m	Resorts :	0	
Volume :	6.03	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	: 10	Alkalinity (mg/l)	138
Total Nitrogen (µg/l)	: 330	Colour	9

	1982	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	7.4	6.6	6.2	5.7	5.1						
Min. Secchi (m)	6.1	4.7	5.3	4.7	3.2						
Mean Chloro. (µg/l)	0.7	1.2	1.4	1.1	1.4						
Max. Chloro. (µg/l)	1.2	2.4	2.1	1.2	2.2						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 2	7.9				
May 10	6.6	0.5			
May 20	7.9	0.4			
July 4	7.9	0.6			
July 15	6.1	1.2			
Aug. 4	7.9	1.1			
Aug. 24	7.3	0.8			
Sept. 8	6.6	0.2			
Sept. 26	7.3	0.6			
Oct. 5	7.9	0.5			
Oct. 14	7.6	1.0			
Mean	7.36	0.69			
Std. dev.	0.65	0.32			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Constan (Constant) LAKE		Renfrew COUNTY		Grattan TOWNSHIP(S)	
Watershed Area:	159.4	km^2	Shoreline :	30.0	km
Surface Area :	611	ha	Cottages :	47 + 5	permanent
Maximum Depth:	21	m	Resorts :	2 (84)	
Volume :	30.87	$\times 10^6$ m^3	% Crown Land :	5	

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	: 10	Alkalinity (mg/l)	118
Total Nitrogen (µg/l)	: 421	Colour	13

	1982	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.3	4.5	4.0	4.0	4.4						
Min. Secchi (m)	3.4	3.7	3.0	3.1	3.2						
Mean Chloro. (µg/l)	1.2	1.6	2.1	1.4	2.2						
Max. Chloro. (µg/l)	2.4	2.6	2.7	3.7	4.5						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 2	4.0	0.5			
June 9	4.0	1.0			
June 17	4.9	1.4			
June 24	4.6	0.9			
June 30	4.3	0.4			
July 7	3.4	1.0			
July 13	4.9				
July 22	5.2	2.4			
July 26	4.3	1.2			
Aug. 12	4.0	1.3			
Aug. 18	4.0	1.4			
Aug. 29	4.3	1.2			
Mean	4.32	1.15			
Std. dev.	0.50	0.53			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Crosby LAKE	Leeds COUNTY	North Crosby TOWNSHIP(S)

Watershed Area:	26.6	km^2	Shoreline	:	17.7 km
Surface Area :	26	ha	Cottages	:	158 (1974)
Maximum Depth:	19	m	Resorts	:	0
Volume :	21.68	$\times 10^6 m^3$	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	18	Alkalinity (mg/l)	54
Total Nitrogen (µg/l)	:	434	Colour	30

	1982	1981	1980	1979[1]	1978	1977	1976	1975[2]	1974[2]	1973	1972
Mean Secchi (m)	4.2	4.4	4.0	3.4				4.1	3.7		
Min. Secchi (m)	3.6	3.6	3.2	3.0				2.3			
Mean Chloro. (µg/l)	2.1	2.5	2.6	4.7				3.6	3.3		
Max. Chloro. (µg/l)	5.4	9.3	5.2	6.9				5.2			

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 9	4.6	1.2			
June 13	4.3	3.0			
June 20	4.3	1.1			
July 4	4.0	0.6			
July 16	4.3	1.4			
Aug. 2	4.3	5.4			
Aug. 12	3.6	2.1			
Aug. 23	4.3	1.9			
Aug. 23		2.6			
Aug. 23		2.1			
Aug. 29	4.3	1.8			
Mean	4.22	2.11			
Std. dev.	0.28	1.29			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Crow LAKE		Frontenac COUNTY		Oso TOWNSHIP(S)	
Watershed Area:	49	km^2	Shoreline :	17	km
Surface Area :	436	ha	Cottages :	95 (1972)	
Maximum Depth:	38	m	Resorts :	7 (53)	
Volume :	63.38	$\times 10^6$ m^3	% Crown Land :	5	

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	21	Alkalinity (mg/l)	60
Total Nitrogen (µg/l)	:	342	Colour	7

	1982	1981	1980[1]	1979	1978[1]	1977	1976	1975[2]	1974	1973	1972[2]
Mean Secchi (m)	5.2	4.2	4.1		5.9	4.8		5.7			4.4
Min. Secchi (m)	4.3	3.2			5.6	4.3		3.1			
Mean Chloro. (µg/l)	2.1	1.7	3.5		2.8	2.2		3.1			2.5
Max. Chloro. (µg/l)	3.0	2.9			3.0	3.6		4.9			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 22	6.2	3.0			
July 28	5.2	2.0			
Aug. 11	4.3	1.9			
Aug. 18	5.8	2.7			
Aug. 30	4.9	1.5			
Sept. 8	4.9	1.6			
Mean	5.22	2.12			
Std. dev.	0.68	0.60			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Crowe LAKE		Hastings COUNTY		Marmora TOWNSHIP(S)	
Watershed Area:	1444	km^2	Shoreline :		km
Surface Area :	876	ha	Cottages :	328	
Maximum Depth:	15.8	m	Resorts :	(458)	
Volume :	49.38	$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	: 10	Alkalinity (mg/l)	58
Total Nitrogen (µg/l)	: 398	Colour	26

	1982	1981	1980	1979	1978	1977[1]	1976	1975[1]	1974[1]	1973	1972[2]
Mean Secchi (m)	3.2	2.8	3.0	2.4	2.4	3.9	4.7	4.7	4.7		3.7
Min. Secchi (m)	2.9	1.8	1.9	2.1	2.0	1.5	3.7	4.6	3.3		3.0
Mean Chloro. (µg/l)	1.6	2.0	2.2	3.2	2.1	3.0	3.3	2.7	1.2		1.7
Max. Chloro. (µg/l)	2.2	3.3	6.1	5.7	3.1	5.8	4.1	3.8	1.7		4.1

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 14	3.2	1.7			
July 18	2.9	1.7			
July 26	3.0	1.8			
Aug. 8	3.2	1.4			
Aug. 15	3.2	1.2			
Aug. 22	3.2	2.2			
Aug. 29	3.2	2.1			
Sept. 12	3.5	1.0			
Sept. 26	3.4	1.4			
Mean	3.20	1.61			
Std. dev.	0.18	0.40			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Dalhousie LAKE		Lanark COUNTY		Dalhousie TOWNSHIP(S)	
Watershed Area:	1288	km^2	Shoreline :	13.5	km
Surface Area :	591	ha	Cottages :	184 + 8	permanent
Maximum Depth:	13.41	m	Resorts :	4 (73)	
Volume :	43.22	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	:	9	Alkalinity (mg/l)	44.3
Total Nitrogen (µg/l)	:	340	Colour	18

	1982	1981	1980[2]	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	4.6	5.0	4.4	3.4	4.6	4.1	3.9	3.6			
Min. Secchi (m)	4.0	3.7	3.0	2.2	2.3	3.4	1.7	2.7			
Mean Chloro. (µg/l)	1.8	1.4	2.4	2.0	1.4	1.6	2.3	3.4			
Max. Chloro. (µg/l)	2.9	1.8	7.3	6.2	3.9	1.9	4.8	6.2			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 20	4.0	2.1			
June 27	5.2	1.6			
July 4	4.0	-			
July 18	4.6	1.1			
July 26	4.9	2.9			
Aug. 2	4.9	1.1			
Aug. 7	4.9	1.7			
Mean	4.64	1.75			
Std. dev.	0.47	0.68			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Davern LAKE		Lanark COUNTY		South Sherbrooke TOWNSHIP(S)		
Watershed Area:	2.4	km^2	Shoreline :	4.1	km	
Surface Area :	52	ha	Cottages :	17		
Maximum Depth:	25.1	m	Resorts :	1 (15)		
Volume :	6.01	$\times 10^6 m^3$	% Crown Land :			

WATER CHEMISTRY 19

Total Phosphorus (µg/l)	:	10	Alkalinity (mg/l)	110
Total Nitrogen (µg/l)	:	412	Colour	6

	1982	1981	1980[2]	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	5.0		5.1								
Min. Secchi (m)	3.7		3.5								
Mean Chloro. (µg/l)	1.1		1.1								
Max. Chloro. (µg/l)	1.8		4.5								

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 20	4.6	1.2			
June 27	6.1	0.7			
July 4	5.9	0.9			
July 11	5.2	0.6			
July 18	5.3	0.9			
July 25	4.3	0.9			
Aug. 1	4.6				
Aug. 8	4.9	1.3			
Aug. 15	5.5	1.2			
Aug. 22	5.0	1.4			
Sept. 5	3.7	1.8			
Sept. 12	4.9	1.4			
Sept. 19	4.7	0.7			
Mean	4.98	1.08			
Std. dev.	0.65	0.36			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Dempseys (Virgin)	Renfrew	Bagot & Blythfield
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:		km^2	Shoreline	:	km
Surface Area	:	ha	Cottages	:	
Maximum Depth	:	m	Resorts	:	
Volume	:	$\times 10^6$ m^3	% Crown Land	:	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	5.5		4.2								
Min. Secchi (m)	4.6		3.2								
Mean Chloro. (µg/l)	1.2		2.4								
Max. Chloro. (µg/l)	2.4		3.0								

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 25	4.6	0.9			
Aug. 2	4.7	2.4			
Aug. 8	5.0	1.6			
Aug. 29	5.0	1.5			
Sept. 12	6.2				
Sept. 19	6.6	0.5			
Oct. 10	6.2	0.5			
Mean	5.47	1.23			
Std. dev.	0.83	0.74			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Desert	Frontenac	Bedford & Loughborough
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	97	km^2	Shoreline	:	28 km
Surface Area :	382	ha	Cottages	:	71 (1976)
Maximum Depth:	68	m	Resorts	:	3 (95)
Volume :	85.5	$\times 10^6 m^3$	% Crown Land	:	0

WATER CHEMISTRY 19

Total Phosphorus (µg/l)	:	18	Alkalinity (mg/l)	76
Total Nitrogen (µg/l)	:	339	Colour	5

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	4.9	4.6	4.6	4.5	5.5	4.9		5.9			
Min. Secchi (m)	3.5	3.7	3.5	3.9	5.0	3.8		3.4			
Mean Chloro. (µg/l)	1.3	2.3	2.3	2.0	1.7	1.7		2.6			
Max. Chloro. (µg/l)	3.6	8.0	4.2	2.4	2.7	2.4		3.5			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)
May 24	4.0	2.7
June 8	4.6	
June 22	4.7	1.6
July 1	5.5	0.7
July 14	4.6	1.4
July 29	4.7	3.6
Aug. 8	5.3	1.4
Aug. 18	6.1	1.3
Mean	4.94	1.81
Std. dev.	0.66	0.99

Date	Secchi (m)	Chloro. (µg/l)
South Bay		
June 13	3.5	1.9
June 20	3.8	1.8
June 27	5.5	0.9
July 4	5.5	0.6
July 11	4.3	1.0
July 18	4.4	0.7
Aug. 8	5.0	1.1
Aug. 29	4.7	1.5
Sept. 11	5.2	1.2
Sept. 19	5.3	0.7
Sept. 26	5.8	
Oct. 3	5.5	
Oct. 17	4.9	
Oct. 23	5.0	0.5
Oct. 31	5.6	0.8
Mean	4.93	1.06
Std. dev.	0.68	0.46

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Devil LAKE		Frontenac COUNTY	Bedford TOWNSHIP(S)	
Watershed Area:	174	km^2	Shoreline :	36.2 km
Surface Area :	1061	ha	Cottages :	220 + 3 houses
Maximum Depth:	45	m	Resorts :	4 (51)
Volume :	152.39	$\times 10^6 m^3$	% Crown Land :	20

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	15	Alkalinity (mg/l)	70.5
Total Nitrogen (µg/l)	:	314	Colour	7

	1982	1981	1980[1]	1979	1978	1977	1976	1975[2]	1974[2]	1973	1972
Mean Secchi (m)	5.7	5.0	4.6	4.1	5.3	4.8	5.2	5.3	5.6		
Min. Secchi (m)	5.0	3.8	4.6	3.7	4.7	4.1	4.5	5.2	4.9		
Mean Chloro. (µg/l)	1.8	2.9	1.8	1.7	1.9	1.7	1.5	2.2	1.6		
Max. Chloro. (µg/l)	2.3	4.2	1.8	3.8	3.4	3.0	2.3	4.7	2.4		

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Bruce Bay			Hays Bay		
June 27	6.1	2.2	June 27	6.4	2.3
July 4	6.4	2.2	July 4	6.6	1.6
July 11	5.5	1.0	July 11	5.9	1.9
Aug. 2	5.5	1.8	Aug. 2	5.2	2.2
Aug. 8	5.5	1.4	Aug. 8	5.6	1.7
Aug. 22	5.8	1.5	Aug. 22	5.5	1.8
Sept. 6	5.0	2.0	Sept. 6	5.0	2.0
Sept. 14	5.8	0.9	Sept. 14	5.6	1.3
Mean	5.70	1.62	Mean	5.72	1.85
Std. dev.	0.43	0.51	Std. dev.	0.55	0.32
Parkers Point					
Aug. 8	5.6	3.6			
Mean	5.6	3.6			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Diamond LAKE		Hastings COUNTY		Herschel TOWNSHIP(S)	
Watershed Area:	32.7	km^2	Shoreline :		km
Surface Area :	150	ha	Cottages :	65 + 16 houses	
Maximum Depth:	23.8	m	Resorts :	1 (6)	
Volume :	12.48	$\times 10^6 m^3$	% Crown Land :	60	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	: 10	Alkalinity (mg/l)	14.5
Total Nitrogen (µg/l)	: 248	Colour	10

	1982[1]	1981	1980	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	5.2	5.3	4.3	4.9	5.1	5.4					
Min. Secchi (m)	4.3	4.3	3.4	4.6	3.7	4.5					
Mean Chloro. (µg/l)	1.2	1.0	1.3	1.3	1.0	1.1					
Max. Chloro. (µg/l)	1.3	1.2	1.8	1.4	1.2	2.5					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 7	4.3	1.1			
July 17	4.3	1.3			
Aug. 12	5.2	1.3			
Sept. 17	6.4				
Oct. 6	5.8	____			
Mean	5.20	1.23			
Std. dev.	0.92	0.12			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Dickey LAKE | Hastings COUNTY | Lake TOWNSHIP(S)

Watershed Area:	54.5	km^2	Shoreline :	17.1	km
Surface Area :	222	ha	Cottages :	125	
Maximum Depth:	46.34	m	Resorts :	0	
Volume :	36.44	$\times 10^6$ m^3	% Crown Land :	25	

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	:	6	Alkalinity (mg/l)	59
Total Nitrogen (µg/l)	:	372	Colour	24

	1982	1981	1980	1979	1978	1977	1976[2]	1975	1973	1972	1971
Mean Secchi (m)	4.9	5.3	4.8				5.0		4.5	4.4	4.3
Min. Secchi (m)	3.4	3.9	3.5				4.2		3.3	3.1	3.5
Mean Chloro. (µg/l)	1.2	1.3	1.2				1.1		1.3	1.4	1.2
Max. Chloro. (µg/l)	1.6	2.6	1.6				1.8		2.4	2.7	2.5

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
North Basin			South Basin		
June 6	4.0	1.5	June 6	4.5	1.6
June 14	3.4	1.4	June 14	3.9	1.5
July 4	4.1	0.8	July 4	4.4	0.8
July 11	3.9		July 11	4.3	0.7
July 18	4.0	1.2	July 18	4.0	1.3
July 25	4.2	1.3	July 25	4.6	1.6
Aug. 16	5.1	1.1	Aug. 16	6.6	1.4
Aug. 23	5.0	1.4	Aug. 23	5.6	
Aug. 30	5.2	1.7	Aug. 30	6.0	1.4
Sept. 6	5.1	0.9	Sept. 6	6.0	1.1
Oct. 3	5.2	0.7	Oct. 3	6.0	0.8
Oct. 11	5.4	1.1	Oct. 11	6.2	0.6
Mean	4.55	1.19	Mean	5.18	1.16
Std. dev.	0.68	0.31	Std. dev.	0.98	0.38

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Eagle	Frontenac	Olden, Hinchinbrooke
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	40.1	km^2	Shoreline	:	41.4 km
Surface Area :	665	ha	Cottages	:	135 + 1 permanent
Maximum Depth:	31.1	m	Resorts	:	2
Volume :	67.2	$\times 10^6 m^3$	% Crown Land	:	5

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	18	Alkalinity (mg/l)	47
Total Nitrogen (µg/l)	:	369	Colour	5

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	4.9	4.6	4.8	4.7		4.3		5.1			
Min. Secchi (m)	4.1	3.2	3.9	3.8		3.7		2.8			
Mean Chloro. (µg/l)	1.8	2.1	2.9	2.2		1.3		2.4			
Max. Chloro. (µg/l)	3.0	3.1	4.2	3.3		1.7		3.5			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
#1			#2		
May 16	3.4	1.4	July 4	5.3	1.4
May 31	5.9	1.9	July 16	5.0	0.8
June 14	5.2	3.0	Aug. 3	5.0	1.6
June 21	4.4	2.4	Aug. 8	5.6	1.8
June 27	5.2	2.1	Aug. 15	5.6	1.9
July 4	4.7	1.0	Aug. 29	4.7	2.7
Aug. 2	4.1	2.4	Sept. 12	5.0	1.6
Aug. 15	5.2	1.6	Sept. 27	5.0	1.9
Aug. 29	4.9	2.2	Oct. 2	5.3	1.8
Sept. 11	4.8	2.1	Oct. 3	5.0	1.8
Oct. 2	5.3	1.8	Oct. 11	5.0	1.3
Oct. 10	5.0	2.2	Oct. 24	4.1	1.0
Mean	4.84	2.01	Mean	5.05	1.63
Std. dev.	0.64	0.52	Std. dev.	0.40	0.49

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Elbow	Frontenac	Hinchinbrooke
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	19.2	km^2	Shoreline	:	km
Surface Area :	126	ha	Cottages	:	46
Maximum Depth:		m	Resorts	:	1 (5)
Volume :		$\times 10^6$ m^3	% Crown Land	:	

WATER CHEMISTRY 1982

Total Phosphorus (µg/l)	:	17	Alkalinity (mg/l)	25
Total Nitrogen (µg/l)	:	542	Colour	52

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.4										
Min. Secchi (m)	2.1										
Mean Chloro. (µg/l)	2.8										
Max. Chloro. (µg/l)	5.0										

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 16	2.3	2.2			
May 30	2.4				
June 19	2.4	3.0			
July 4		2.0			
July 25	2.4	3.5			
Aug. 3	2.4				
Aug. 8	2.6	3.4			
Aug. 15	2.4	3.5			
Aug. 16	2.6	3.0			
Sept. 5	2.4	3.1			
Sept. 19	2.5	1.9			
Oct. 17		5.0			
Oct. 27	2.1	1.6			
Oct. 23	2.1	0.9			
Mean	2.38	2.76			
Std. dev.	0.16	1.09			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Faraday (Trout) LAKE		Hastings COUNTY		Faraday TOWNSHIP(S)	
Watershed Area:	19.20	km^2	Shoreline :	7.57	km
Surface Area :	113	ha	Cottages :	89	
Maximum Depth:	24.4	m	Resorts :	1 (15)	
Volume :	10.19	$\times 10^6$ m^3	% Crown Land :	35	

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	:	7	Alkalinity (mg/l) 40
Total Nitrogen (µg/l)	:	257	Colour 7

	1982	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	5.5				6.1						
Min. Secchi (m)	4.1				4.8						
Mean Chloro. (µg/l)	1.2				1.4						
Max. Chloro. (µg/l)	1.6				1.8						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 6	5.3				
June 13	4.8				
June 27	4.9	1.4			
June 27	4.1	1.3			
July 13	6.7	1.6			
July 27	6.6	1.0			
Aug. 12	6.4	0.9			
Mean	5.54	1.25			
Std. dev.	1.02	0.29			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Farren (Farrell) LAKE		Lanark COUNTY	South Sherbrooke TOWNSHIP(S)	
Watershed Area:	12.25	km^2	Shoreline :	9.5 km
Surface Area :	173	ha	Cottages :	101 (1974)
Maximum Depth:	21.3	m	Resorts :	1 (6)
Volume :	14.32	$\times 10^6$ m^3	% Crown Land :	0

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	: 8	Alkalinity (mg/l)	87
Total Nitrogen (µg/l)	: 360	Colour	5

	1982	1981	1980[2]	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	5.0	5.7	5.2					4.7			
Min. Secchi (m)	4.3	3.6	3.5					2.7			
Mean Chloro. (µg/l)	1.3	1.6	2.2					2.0			
Max. Chloro. (µg/l)	2.2	2.6	3.3					4.3			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 8	4.0	1.7			
June 27	6.0	0.9			
July 4	5.5	1.3			
July 18	5.5	1.3			
Aug. 1	5.5	1.2			
Aug. 8	5.3	0.8			
Aug. 15	4.7	2.2			
Aug. 29	4.3	1.0			
Sept. 12	4.7	1.1			
Sept. 26	5.0	1.1			
Mean	5.05	1.26			
Std. dev.	0.62	0.41			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Gananoque	Leeds	Rear & Front of Leeds Lansdowne
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	424.40	km^2	Shoreline	:	33.17 km
Surface Area :	617	ha	Cottages	:	111
Maximum Depth:	23.77	m	Resorts	:	2 (19)
Volume :	42.82	$\times 10^6 m^3$	% Crown Land	:	-

WATER CHEMISTRY 1982

Total Phosphorus (µg/l)	: 17	Alkalinity (mg/l)	113
Total Nitrogen (µg/l)	: 484	Colour	18

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.8	3.7	1.8	3.2	3.0	2.2					
Min. Secchi (m)	2.5	2.7	1.2	2.5	2.3	1.5					
Mean Chloro. (µg/l)	3.6	4.6	5.3	3.1	4.7	3.1					
Max. Chloro. (µg/l)	10.3	6.6	12.1	4.8	8.3	5.8					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 24	2.7	3.0			
June 3	3.0	1.9			
June 20	2.7	2.4			
July 3	2.7	1.0			
Aug. 3	2.7				
Aug. 9	3.0	10.3			
Aug. 14	2.5	4.3			
Aug. 29	2.7	4.8			
Sept. 5	2.7	4.0			
Sept. 11	2.7	3.0			
Sept. 25	3.0	1.8			
Mean	2.76	3.65			
Std. dev.	0.16	2.62			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Glanmire — LAKE | Hastings — COUNTY | Tudor — TOWNSHIP(S)

Watershed Area:	7.59	km^2	Shoreline :	9.8	km
Surface Area :	91	ha	Cottages :	33	
Maximum Depth:	6.7	m	Resorts :	0	
Volume :	2.93	$\times 10^6$ m^3	% Crown Land :	-	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	:	18	Alkalinity (mg/l)	35
Total Nitrogen (µg/l)	:	543	Colour	13

	1982	1981	1980[1]	1979	1978	1977	1976[2]	1975[1]	1974	1973	1972
Mean Secchi (m)	3.4	2.8	3.0	3.6	3.7	3.4	4.0	3.6			
Min. Secchi (m)	2.7	1.5	2.1	1.5	3.0	2.1	1.8	1.8			
Mean Chloro. (µg/l)	1.3	6.1	8.3	3.4	3.0	1.9	3.3	6.3			
Max. Chloro. (µg/l)	1.8	12.2	17.5	8.8	6.4	4.2	9.0	15.0			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 2	2.7				
May 16	2.7	1.0			
May 30	4.3	1.3			
June 27	4.6	1.0			
July 18	3.0	1.7			
Aug. 8	3.6	1.8			
Aug. 15	3.0	1.2			
Sept. 12	3.0	1.0			
Mean	3.36	1.28			
Std. dev.	0.73	0.34			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Golden LAKE		Renfrew COUNTY		North Algona TOWNSHIP(S)	
Watershed Area:	1488	km^2	Shoreline :	46.7	km
Surface Area :	3375	ha	Cottages :	397 + 43	houses
Maximum Depth:	24	m	Resorts :	14 (515)	
Volume :	300	$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	:	10	Alkalinity (mg/l) 22.3
Total Nitrogen (µg/l)	:	360	Colour 12

	1982[1]	1981	1980	1979	1978[2]	1977	1976[1]	1975	1974	1973	1972[2]
Mean Secchi (m)	3.7		3.7	4.0	4.2		3.7				3.2
Min. Secchi (m)	2.9		2.7	3.4	3.2		3.5				
Mean Chloro. (µg/l)	2.6		2.6	1.7	2.0		2.2				1.5
Max. Chloro. (µg/l)	3.2		4.1	1.1	2.6		2.5				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Aug. 8	3.6	2.3			
Aug. 21	4.6	2.2			
Sept. 5	2.9	3.2			
Mean	3.70	2.57			
Std. dev.	0.85	0.55			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Green LAKE		Renfrew COUNTY		Brougham TOWNSHIP(S)	
Watershed Area:	4.13	km^2	Shoreline :	6.4	km
Surface Area :	75	ha	Cottages :	39	
Maximum Depth:	42.7	m	Resorts :	0	
Volume :	12.6	$\times 10^6 m^3$	% Crown Land :	70	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	: 12	Alkalinity (mg/l)	94
Total Nitrogen (µg/l)	: 206	Colour	7

	1982	1981	1980	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	7.9	9.8	8.9	7.9	8.0	9.1	8.5				
Min. Secchi (m)	7.5	7.8	5.3	4.7	6.6	7.2	7.0				
Mean Chloro. (µg/l)	0.8	1.5	1.1	1.7	0.8	0.8	1.6				
Max. Chloro. (µg/l)	1.4	2.9	2.8	2.9	1.5	1.3	3.8				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 31	7.6	1.4			
June 9	7.9	0.9			
June 27	7.5	0.4			
July 5	8.3	0.6			
July 26	7.8	0.6			
Aug. 2	7.9	0.9			
Aug. 15	8.2	0.9			
Aug. 24	8.1	0.9			
Sept. 7	7.8	____			
Mean	7.90	0.82			
Std. dev.	0.26	0.30			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Grippen	Leeds	Rear of Leeds & Lansdowne
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	20.30	km^2	Shoreline	:	7.72 km
Surface Area :	191	ha	Cottages	:	76
Maximum Depth:	16.00	m	Resorts	:	1
Volume :	22.03	$\times 10^6 m^3$	% Crown Land	:	0

WATER CHEMISTRY 1982

Total Phosphorus (µg/l)	:	20	Alkalinity (mg/l)	129
Total Nitrogen (µg/l)	:	.481	Colour	11

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.0	2.9	3.8	2.9	3.2	2.6	3.9	2.9			
Min. Secchi (m)	1.8	1.1	2.9	2.0	2.1	1.4	2.3	1.8			
Mean Chloro. (µg/l)	3.8	5.9	4.0	2.5	3.1	2.1	3.1	2.6			
Max. Chloro. (µg/l)	7.4	11.0	7.0	3.7	4.7	4.6	5.6	5.6			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 24	3.4	3.0			
May 31	3.0	7.4			
June 8	2.6	2.9			
June 17	2.1	5.4			
June 28	1.8	2.3			
July 13	4.0	5.7			
July 23	4.9	3.7			
July 30	4.0				
Aug. 5	4.9	5.4			
Aug. 12	5.2	2.6			
Aug. 20	5.5	3.7			
Sept. 12	4.8	3.0			
Sept. 21	5.4	2.5			
Sept. 29	5.0	1.6			
Mean	4.04	3.78			
Std. dev.	1.26	1.68			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Gunter LAKE		Hastings COUNTY	Cashel TOWNSHIP(S)	
Watershed Area:	20.6	km^2	Shoreline :	5.5 km
Surface Area :	69	ha	Cottages :	46 + 9 houses
Maximum Depth :	18.3	m	Resorts :	2
Volume :	12.63	$\times 10^6 m^3$	% Crown Land :	18

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	:	14	Alkalinity (mg/l) 100
Total Nitrogen (µg/l)	:	364	Colour 10

	1982	1981	1980	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	3.9	4.3	3.6			5.2					
Min. Secchi (m)	3.0	2.9	2.7			3.6					
Mean Chloro. (µg/l)	1.7	2.5	2.0			2.0					
Max. Chloro. (µg/l)	4.2	4.6	2.7			4.2					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
22A			22B		
May 9	3.7		May 9	3.4	
June 5	3.0	2.5	June 5	3.0	1.4
June 14	4.0	1.1	June 14	3.7	1.5
July 4	3.8		July 4	3.7	
July 26	5.0	2.1	July 26	4.5	4.2
Aug. 12	4.6	1.5	Aug. 12	3.6	1.6
Sept. 8	3.7		Sept. 8	3.7	1.5
Oct. 3	4.3	1.3	Oct. 3	4.0	3.0
Oct. 20	3.7	1.6	Oct. 20	3.7	1.6
Nov. 1	4.0	0.6	Nov. 1	4.0	0.6
Mean	3.98	1.53	Mean	3.73	1.93
Std. dev.	0.55	0.63	Std. dev.	0.39	1.13

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Hay Bay	Lennox & Addington	Fredericksburgh
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	km^2	Shoreline :	km
Surface Area :	ha	Cottages :	
Maximum Depth:	m	Resorts :	
Volume :	$\times 10^6 m^3$	% Crown Land :	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976[1]	1975	1974	1973	1972
Mean Secchi (m)	1.6	1.4	1.0	1.2	1.5	1.1	0.8				
Min. Secchi (m)	1.1	0.9	0.5	0.7	0.8	0.9	0.8				
Mean Chloro. (µg/l)	11.3	14.2	19.9	16.6	12.1	16.6	16.0				
Max. Chloro. (µg/l)	25.0	25.0	30	34.5	33.9	35.8	23.0				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Apr. 26	1.4	12.9			
May 26	2.4	1.6			
May 27	2.4	1.4			
June 17	1.2	8.5			
June 22	1.4	11.1			
Aug. 6	1.4	17.2			
Sept. 8	1.4	25.0			
Sept. 21	1.1	12.4			
Mean	1.59	11.26			
Std. dev.	0.51	7.80			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Howes LAKE		Frontenac COUNTY		Portland TOWNSHIP(S)	
Watershed Area:	97	km^2	Shoreline :	8.9	km
Surface Area :	154	ha	Cottages :		
Maximum Depth:	12.8	m	Resorts :		
Volume :		$\times 10^6 m^3$	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982[1]	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.2			1.9		2.4					
Min. Secchi (m)	1.8			1.2		1.5					
Mean Chloro. (µg/l)	6.1			7.4		4.1					
Max. Chloro. (µg/l)	8.9			11.8		8.9					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 4	2.1	6.4			
July 9	2.6	1.9			
July 15	2.5	5.9			
July 21	2.1	7.6			
Aug. 6	1.8	8.9			
Mean	2.22	6.14			
Std. dev.	0.33	2.64			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Indian LAKE		Leeds COUNTY		South Crosby TOWNSHIP(S)	
Watershed Area:	359	km^2	Shoreline :	16.58	km
Surface Area :	266	ha	Cottages :		
Maximum Depth:	26	m	Resorts :		
Volume :	26.79	$\times 10^6 m^3$	% Crown Land :		

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	20	Alkalinity (mg/l)	85
Total Nitrogen (µg/l)	:	417	Colour	7

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1973	1972	1971[2]
Mean Secchi (m)	4.3		3.9			3.6		4.6			4.2
Min. Secchi (m)	3.3		3.0			3.0		3.7			
Mean Chloro. (µg/l)	2.2		3.0			2.0		3.6			2.0
Max. Chloro. (µg/l)	3.4		4.1			2.7		6.7			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 14	4.1	2.8			
June 23	4.0	1.8			
July 7	3.3	1.6			
July 16	3.7	3.4			
July 22	4.6	1.2			
July 29	4.7	2.7			
Aug. 2	4.0	3.2			
Aug. 15	4.1	1.5			
Aug. 22	4.3	2.5			
Aug. 29	4.3	3.4			
Sept. 7	4.9	1.4			
Sept. 21	5.2	1.1			
Mean	4.27	2.22			
Std. dev.	0.52	0.88			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Joeperry LAKE		Lennox & Addington COUNTY		Effingham TOWNSHIP(S)	
Watershed Area:	15.4	km^2	Shoreline :		km
Surface Area :	169	ha	Cottages :	0	
Maximum Depth:	-	m	Resorts :	0	
Volume :	-	$\times 10^6 m^3$	% Crown Land :	-	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	: 9	Alkalinity (mg/l)	6.9
Total Nitrogen (µg/l)	: 293	Colour	15

	1982	1981	1980[1]	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	3.8	5.6	3.0	3.8	4.2	4.2	4.4				
Min. Secchi (m)	3.0	3.0	2.4	2.8	3.0	3.0	3.6				
Mean Chloro. (µg/l)	2.0	1.7	2.0	2.5	2.5	2.5	1.6				
Max. Chloro. (µg/l)	2.6	1.9	1.5	2.8	2.6	2.6	2.3				

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 16	6.1	2.5			
June 30	3.0	0.6			
July 14	4.3	2.6			
Aug. 4	3.0	2.4			
Aug. 11	3.0				
Aug. 26	3.7	2.1			
Mean	3.85	2.04			
Std. dev.	1.22	0.83			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Limerick LAKE		Hastings COUNTY		Limerick TOWNSHIP(S)	
Watershed Area:	181.41	km^2	Shoreline :	27	km
Surface Area :	744	ha	Cottages :	130 + 3 permanent	
Maximum Depth:	29.0	m	Resorts :	1 (14)	
Volume :	62.87	$\times 10^6 m^3$	% Crown Land :	1	

WATER CHEMISTRY 19

Total Phosphorus (µg/l)	:	10	Alkalinity (mg/l)	94
Total Nitrogen (µg/l)	:	272	Colour	8

	1982	1981[1]	1980	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	4.4	4.4	4.7	4.4	4.9	5.0	4.9	5.0			
Min. Secchi (m)	4.0	3.0	3.0	4.0	3.7	3.8	4.0	4.3			
Mean Chloro. (µg/l)	1.2	1.3	1.5	1.4	1.3	1.2	1.1	1.1			
Max. Chloro. (µg/l)	1.5	2.3	2.4	1.8	1.6	3.0	1.5	1.6			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 6	4.6	0.8			
July 22	4.9	1.1			
July 31	4.0	1.5			
Aug. 6	4.3	1.2			
Aug. 13	4.3	1.0			
Aug. 20	4.3	1.3			
Aug. 26	4.3	____			
Mean	4.38	1.15			
Std. dev.	0.28	0.24			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Little Silver LAKE		Lanark COUNTY		S. Sherbrooke TOWNSHIP(S)	
Watershed Area:	8.1	km^2	Shoreline :	10.1	km
Surface Area :	83	ha	Cottages :	31	
Maximum Depth:	12.2	m	Resorts :	0	
Volume :	3.82	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	: 16	Alkalinity (mg/l)	66
Total Nitrogen (µg/l)	: 368	Colour	10

	1982	1981	1980	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	4.4			4.0	5.3	4.0					
Min. Secchi (m)	3.5			3.0	3.8	3.0					
Mean Chloro. (µg/l)	2.1			4.6	2.6	4.4					
Max. Chloro. (µg/l)	3.5			9.2	6.0	8.8					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 23	5.5				
Aug. 5	4.9	2.4			
Aug. 20	4.3	2.1			
Aug. 29	3.5	3.5			
Sept. 8	4.1	0.8			
Sept. 17	4.7	1.9			
Oct. 6	4.1	1.7			
Mean	4.44	2.07			
Std. dev.	0.65	0.89			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Loughborough (W. Basin)	Frontenac	Storrington, Loughborough
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	58	km^2	Shoreline	:	28.7 km
Surface Area :	738	ha	Cottages	:	138 + 13 houses (1972)
Maximum Depth:	38.4	m	Resorts	:	3 (187)
Volume :	107.13	$\times 10^6 m^3$	% Crown Land	:	-

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	22	Alkalinity (mg/l)	112
Total Nitrogen (µg/l)	:	397	Colour	5

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974[1]	1973	1972
Mean Secchi (m)	6.0	6.8	4.8	4.0	3.9	3.4	4.5	4.2	3.8	4.0	
Min. Secchi (m)	5.5	5.8	3.4	2.8	3.0	2.3	3.8	2.6	2.8	3.2	
Mean Chloro. (µg/l)	1.4	2.7	2.5	2.0	1.8	2.2	2.5	2.0	2.0	1.2[1]	
Max. Chloro. (µg/l)	2.9	3.4	5.0	2.7	2.6	3.8	3.1	4.2	2.4	1.3	

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 2	5.6	0.9			
May 30	5.6	1.8			
June 13	5.9	1.3			
July 6	6.7	0.6			
July 18	6.4	0.5			
Aug. 3	6.9	2.4			
Aug. 16	5.8	1.6			
Aug. 29	5.5	2.9			
Sept. 12	5.5	1.2			
Sept. 26	5.8	1.1			
Mean	5.97	1.43			
Std. dev.	0.51	0.77			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Loughborough (East Basin)	Frontenac	Storrington, Loughborough
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	120	km^2	Shoreline	:	72.4 km
Surface Area :	1065	ha	Cottages	:	240 + 10 houses (1972)
Maximum Depth:	6.1	m	Resorts	:	2 (74)
Volume :	22.08	$\times 10^6$ m^3	% Crown Land	:	-

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	26	Alkalinity (mg/l)	90
Total Nitrogen (µg/l)	:	567	Colour	15

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.8	2.9	3.2	3.3	3.0	2.8	3.4	2.4	2.7	3.3	3.1
Min. Secchi (m)	2.1	2.1	2.3	2.9	2.4	2.1	2.3	1.6	2.0	2.7	
Mean Chloro. (µg/l)	3.1	4.9	5.1	3.6	3.6	3.7	2.1	4.6	2.7	3.3	2.6
Max. Chloro. (µg/l)	5.9	6.7	8.1	5.7	6.7	6.2	3.6	9.5	6.0	4.5	

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 18	2.3	5.9			
June 27	2.7	2.7			
July 4	2.7	2.2			
July 14	2.4	2.4			
July 21	2.5	2.8			
July 28	2.1	3.6			
Aug. 4	2.4	4.0			
Aug. 11	2.1	4.8			
Aug. 18	2.1	4.0			
Aug. 26	2.3	5.1			
Sept. 9	2.3	2.7			
Sept. 19	3.8	1.7			
Sept. 29	3.2	2.5			
Oct. 4	3.0	3.3			
Oct. 13	3.2	2.8			
Oct. 20	3.4	3.1			
Oct. 27	3.5	1.0			
Nov. 3	3.7	1.5			
Mean	2.76	3.12			
Std. dev.	0.58	1.28			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Mackie LAKE		Frontenac COUNTY		Miller TOWNSHIP(S)	
Watershed Area:	40.52	km^2	Shoreline :	11.3	km
Surface Area :	157	ha	Cottages :	56	
Maximum Depth:	22.9	m	Resorts :	1 (34)	
Volume :	13.43	$\times 10^6 m^3$	% Crown Land :	5	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	: 7	Alkalinity (mg/l)	34
Total Nitrogen (µg/l)	: 293	Colour	5

	1982	1981	1980	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	5.1	6.1	4.9	6.7	6.1	6.3	5.8			6.6	
Min. Secchi (m)	3.7	4.9	3.7	5.5	4.9	5.0	4.4			4.8	
Mean Chloro. (µg/l)	2.0	2.3	4.8	4.6	2.5	1.8	1.9			0.5	
Max. Chloro. (µg/l)	5.4	3.6	10.6	12.2	5.7	3.7	4.0			0.7	

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 7	3.7	1.2			
June 20	5.2	5.4			
July 2	5.2	1.3			
July 17	5.2	1.2			
Aug. 4	5.0	2.0			
Aug. 28	4.9	2.2			
Sept. 29	6.4	1.6			
Oct. 10	5.2	1.5			
Mean	5.10	2.05			
Std. dev.	0.73	1.40			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Mazinaw	Frontenac, Lennox & Addington	Abinger, Barrie
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	137.85	km^2	Shoreline	:	49.1 km
Surface Area :	1590	ha	Cottages	:	254 (1972)
Maximum Depth:	144.8	m	Resorts	:	3 (47), 5 (765)
Volume :	655	$\times 10^6$ m^3	% Crown Land	:	Prov. Park

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l) 18
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1971[2]
Mean Secchi (m)	3.5	4.7	4.6	5.2	5.0	4.9	5.3	5.7			5.2
Min. Secchi (m)	2.4	3.0	3.0	3.4	4.2	3.0	4.2	5.2			3.6
Mean Chloro. (µg/l)	1.2	1.2	1.7	1.4	1.0	1.2	1.2	1.1			1.0
Max. Chloro. (µg/l)	1.6	1.6	2.5	3.1	1.7	2.6	1.6	1.7			1.9

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Upper Basin					
June 16	4.3	0.9			
June 30	2.4	0.8			
July 14	4.6	0.8			
Aug. 4	3.0	1.4			
Aug. 11	3.0	1.6			
Aug. 26	3.7	1.4			
Mean	3.50	1.15			
Std. dev.	0.85	0.36			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Mink LAKE		Renfrew COUNTY	Wilberforce TOWNSHIP(S)	
Watershed Area:	40.2	km^2	Shoreline :	- km
Surface Area :	556	ha	Cottages :	119
Maximum Depth:	13.7	m	Resorts :	2 (102)
Volume :	72.3	$\times 10^6 m^3$	% Crown Land :	0

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	: 10	Alkalinity (mg/l)	99
Total Nitrogen (µg/l)	: 480	Colour	4

	1982[1]	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973[1]	1972
Mean Secchi (m)	2.7[1]	3.0	4.1	4.2	4.1	3.5	3.6	3.8		3.4[1]	
Min. Secchi (m)	2.4[1]	1.7	3.8	3.7	3.8	2.9	2.6	3.0		2.6[11]	
Mean Chloro. (µg/l)	1.8[1]	2.5	3.5	1.4	2.0	1.5	1.8	1.8		1.2[1]	
Max. Chloro. (µg/l)	2.9[1]	4.7	8.5	1.8	6.0	2.5	2.8	5.9		1.4[1]	

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 21	2.7	2.7			
July 13	2.4	2.9			
July 19	2.6	0.9			
Aug. 22	2.9	1.8			
Sept. 12	2.9	0.7			
Mean	2.70	1.80			
Std. dev.	0.21	1.00			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Mississippi	Lanark	Drummond, Beckwith, Ramsay
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	2900	km^2	Shoreline	:	58 km
Surface Area :	2346	ha	Cottages	:	1278 + 11 houses
Maximum Depth:	9.2	m	Resorts	:	16 (1121)
Volume :	64.33	$\times 10^6$ m^3	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	26	Alkalinity (mg/l)	84
Total Nitrogen (µg/l)	:	460	Colour	25

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.6	2.5	2.7	3.9	4.1	3.4		2.5	3.6	4.3	
Min. Secchi (m)	1.7	1.7	1.8	1.5	3.5	2.9		2.0	2.6		
Mean Chloro. (µg/l)	3.6	4.9	3.0	2.1	2.0	1.8		9.1	2.0	2.2	
Max. Chloro. (µg/l)	8.8	14.0	4.3	9.2	3.1	2.8		16.0	4.7		

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 8	3.4	1.4			
June 14	2.4	1.9			
June 22	1.7	1.3			
June 28	4.0	1.9			
July 5	3.0	0.9			
July 12	1.7	6.1			
July 18	3.7	1.3			
July 27	1.8	3.6			
Aug. 2	2.7	8.8			
Aug. 9	2.1	3.3			
Aug. 15	2.1	6.6			
Aug. 30	2.4	5.9			
Mean	2.58	3.58			
Std. dev.	0.79	2.63			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Moira (East Basin) LAKE		Hastings COUNTY		Huntington TOWNSHIP(S)	
Watershed Area:	596	km^2	Shoreline :	14.7	km
Surface Area :	611	ha	Cottages :		
Maximum Depth:	11	m	Resorts :		
Volume :		$\times 10^6 m^3$	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l) 166
Colour

	1982	1981	1980	1979[1]	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.0	3.1		2.0	2.0	2.0			2.1		
Min. Secchi (m)	1.2	2.2		0.9	1.4	1.4			0.8		
Mean Chloro. (µg/l)	11.3	5.1		10.2	8.0	7.2			9.2		
Max. Chloro. (µg/l)	28.8	14.0		29.5	18.2	20.7			51.0		

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 5	2.9	2.9			
June 13	3.5	2.7			
June 18	3.0	1.3			
July 4	2.4	7.5			
July 15	2.0	6.1			
July 25	1.3	8.0			
Aug. 7	1.5	16.7			
Sept. 6	1.2	28.8			
Sept. 19	1.2	20.8			
Oct. 3	1.2	18.0			
Mean	2.02	11.28			
Std. dev.	0.87	9.23			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Mosque (Main Basin) LAKE		Frontenac COUNTY		Miller, Clarendon TOWNSHIP(S)	
Watershed Area:	6.21	km^2	Shoreline :	13.2	km
Surface Area :	138	ha	Cottages :	43	
Maximum Depth:	34.1	m	Resorts :	1 (3)	
Volume :	9.70	$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	:	17	Alkalinity (mg/l)	37
Total Nitrogen (µg/l)	:	352	Colour	8

	1982	1981	1980[2]	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	5.0	5.6	6.0	5.6	5.5	5.2	6.3				
Min. Secchi (m)	4.3	3.7	4.9	3.4	4.6	4.6	3.8				
Mean Chloro. (µg/l)	1.4	1.4	1.6	1.4	1.7	1.7	1.8				
Max. Chloro. (µg/l)	2.6	2.5	2.1	2.0	3.8	3.8	5.9				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
St. 1			St. 2		
June 12	5.8		June 12	5.5	1.1
July 6	5.5	0.4	July 6	5.5	
July 17	4.6	0.6	July 17	4.6	1.2
Aug. 8	5.2	0.8	Aug. 8	5.2	0.8
Aug. 21	5.2	1.2	Aug. 21	4.9	2.6
Sept. 4	5.2	1.0	Sept. 4	4.8	
Sept. 18	4.6	0.6	Sept. 18	4.3	0.7
Oct. 10	4.4	1.0	Oct. 10	4.4	0.8
Mean	5.06	0.80	Mean	4.90	1.20
Std. dev.	0.49	0.28	Std. dev.	0.46	0.71

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Mosque (West Basin) LAKE	Frontenac COUNTY	Miller, Clarendon TOWNSHIP(S)

Watershed Area:	km^2	Shoreline :	km
Surface Area :	ha	Cottages :	
Maximum Depth:	m	Resorts :	
Volume :	$\times 10^6$ m^3	% Crown Land :	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	: 18	Alkalinity (mg/l)	38
Total Nitrogen (µg/l)	: 350	Colour	8

	1982	1981	1980[1]	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	4.0	4.5	5.1	4.6	4.5	3.9	4.8				
Min. Secchi (m)	3.0	3.9	4.0	3.7	3.7	3.4	2.9				
Mean Chloro. (µg/l)	1.3	1.7	2.6	3.2	3.7	2.9	4.6				
Max. Chloro. (µg/l)	2.0	3.1	3.7	4.5	5.9	5.4	11.0				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 12	5.0	2.0			
July 6	4.0	0.5			
July 17	3.7	1.2			
Aug. 8	5.2	1.7			
Aug. 21	4.0	1.0			
Sept. 4	3.6	1.8			
Sept. 18	3.0	0.9			
Oct. 10	3.8	1.1			
Mean	4.04	1.28			
Std. dev.	0.73	0.51			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Muskrat LAKE		Renfrew COUNTY		Westmeath, Ross TOWNSHIP(S)	
Watershed Area:	481	km^2	Shoreline :	34.0	km
Surface Area :	1202	ha	Cottages :	132 + 21	houses
Maximum Depth :	64	m	Resorts :	5 (357)	
Volume :	213.2	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1982

Total Phosphorus (µg/l)	: 35	Alkalinity (mg/l)	118
Total Nitrogen (µg/l)	: 621	Colour	21

	1982	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.6	1.6		2.4	2.8	1.7					
Min. Secchi (m)	1.8	0.9		1.8	1.6	1.2					
Mean Chloro. (µg/l)	14.9	19.6		7.1	8.0	10.3					
Max. Chloro. (µg/l)	37.8	71.0		19.2	31.2	28.0					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 23	2.0	3.2			
June 30	2.1	1.0			
July 7	1.8	10.7			
July 14	2.7	5.9			
July 21	3.0	3.9			
July 28	3.0				
Aug. 4	3.5	9.5			
Aug. 11	2.3	28.0			
Aug. 18	2.4	31.5			
Aug. 26	2.3	28.4			
Aug. 31	2.0	37.8			
Sept. 9	2.0	4.4			
Oct. 27	4.5	____			
Mean	2.58	14.94			
Std. dev.	0.76	13.58			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

McKay — LAKE
COUNTY
Regional Municipality of Ottawa-Carleton — TOWNSHIP(S)

Watershed Area:	km²	Shoreline	:		km
Surface Area :	ha	Cottages	:	0	
Maximum Depth:	m	Resorts	:	0	
Volume :	x 10^6 m^3	% Crown Land	:		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.4										
Min. Secchi (m)	1.1										
Mean Chloro. (µg/l)	1.6										
Max. Chloro. (µg/l)	3.6										

1/2 based on less than 6 measurements
includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Apr. 24	1.7	0.7			
May 2	1.1	0.9			
May 21	1.8	2.6			
June 8	1.8	0.6			
June 26	2.7	1.5			
July 9	4.2				
July 16	3.4	1.2			
Aug. 6	3.5	3.6			
Sept. 19	2.5	1.3			
Sept. 26	2.1				
Oct. 24	1.5	2.0			
Mean	2.39	1.60			
Std. dev.	0.97	0.98			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

McKay Lake - The Pond — LAKE

Regional Municipality of Ottawa-Carleton — COUNTY / TOWNSHIP(S)

Watershed Area:	km^2	Shoreline	:	km
Surface Area :	ha	Cottages	:	
Maximum Depth:	m	Resorts	:	
Volume :	$\times 10^6$ m^3	% Crown Land	:	

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	3.2										
Min. Secchi (m)	1.8										
Mean Chloro. (µg/l)	1.8										
Max. Chloro. (µg/l)	3.7										

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Apr. 24	2.8				
May 2	1.8				
May 21	2.7	3.7			
June 8	1.8	1.3			
June 26	3.9	2.2			
July 9	3.9	0.6			
July 16	3.7	2.8			
Aug. 6	3.8	0.8			
Sept. 19	3.8	1.3			
Sept. 26	3.9				
Oct. 24	2.6				
Mean	3.15	1.81			
Std. dev.	0.84	1.13			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Norway LAKE		Renfrew COUNTY		Bagot & Blythfield TOWNSHIP(S)	
Watershed Area:	14.4	km^2	Shoreline :	12.9	km
Surface Area :	271	ha	Cottages :	124	
Maximum Depth:	36.6	m	Resorts :	0	
Volume :	25.38	$\times 10^6 m^3$	% Crown Land :	99	

WATER CHEMISTRY 19

Total Phosphorus (µg/l)	:	11	Alkalinity (mg/l)	105
Total Nitrogen (µg/l)	:	460	Colour	5

	1982[1]	1981[1]	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	4.8	5.1		4.7	4.8						
Min. Secchi (m)	4.0	3.9		3.5	3.0						
Mean Chloro. (µg/l)	0.9	1.0		1.7	1.6						
Max. Chloro. (µg/l)	1.0	1.4		3.8	3.2						

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 28	4.6				
Aug. 16	4.0	1.0			
Sept. 5	4.6	0.9			
Sept. 19	5.5	0.6			
Oct. 2	5.2	0.9			
Mean	4.78	0.85			
Std. dev.	0.58	0.17			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Olmsted (Jeffreys) LAKE | Renfrew COUNTY | Ross TOWNSHIP(S)

Watershed Area:	26.8	km^2	Shoreline :	10.6	km
Surface Area :	180	ha	Cottages :	49	
Maximum Depth:	29.3	m	Resorts :	0	
Volume :		$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	: 12	Alkalinity (mg/l)	88
Total Nitrogen (µg/l)	: 345	Colour	9

	1982	1981	1980	1979	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	6.2	5.7	5.4	6.3	6.0	6.3					
Min. Secchi (m)	5.5	4.3	4.9	5.5	4.2	4.3					
Mean Chloro. (µg/l)	1.2	2.0	2.6	1.2	1.5	1.4					
Max. Chloro. (µg/l)	2.5	5.8	3.1	1.9	3.7	5.4					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 18	5.5				
June 5	5.5	1.3			
June 20	7.3				
July 4	5.8	0.4			
July 18	6.1	0.8			
Aug. 1	5.5	1.4			
Aug. 15	5.5	1.9			
Aug. 29	5.8	2.5			
Sept. 15	6.7	0.5			
Sept. 26	8.5	0.5			
Mean	6.22	1.16			
Std. dev.	1.00	0.75			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Opinicon	Frontenac, Leeds	Bedford, South Crosby, Storrington
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	580	km^2	Shoreline	:	52 km
Surface Area :	785	ha	Cottages	:	120 (1971)
Maximum Depth:	9.15	m	Resorts	:	6 (104)
Volume :	38.31	$\times 10^6$ m^3	% Crown Land	:	-

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	30	Alkalinity (mg/l)	72
Total Nitrogen (µg/l)	:	504	Colour	7

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.1	3.2	3.2	3.3	3.0	2.8		3.0			
Min. Secchi (m)	2.6	2.7	2.4	2.7	2.7	2.3		2.3			
Mean Chloro. (µg/l)	2.7	3.1	3.9	3.7	3.6	2.6		3.1			
Max. Chloro. (µg/l)	5.0	6.3	7.3	12.4	7.1	3.8		5.2			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
#1			#2		
May 25	3.8	1.1	July 11	3.3	1.4
June 7	3.4	3.9	July 18	3.5	1.6
June 13	3.0	4.8	July 25	3.4	2.6
June 23	3.0	1.3	Aug. 1	2.9	3.2
June 28	3.4	2.8	Aug. 9	3.0	4.1
July 5	3.7	1.8	Aug. 15	2.9	3.6
July 12	3.4	1.7	Aug. 22	3.0	5.0
July 19	3.5	2.7	Sept. 5	3.2	2.7
Aug. 3	2.6	2.7			
Aug. 11	2.6	3.9	Mean	3.15	3.02
Aug. 16	2.7	3.7	Std. dev.	0.23	1.22
Aug. 30	2.7	4.8			
Sept. 7		1.1			
Sept. 12	3.0	1.4			
Sept. 27	3.6	1.7			
Oct. 3	3.0	2.8			
Oct. 10	3.2	2.3			
Mean	3.16	2.62			
Std. dev.	0.39	1.23			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Otter	Leeds	Bastard, South Elmsley
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	46.55	km^2	Shoreline	:	255 km
Surface Area :	602	ha	Cottages	:	290 + 5 houses
Maximum Depth:	36.6	m	Resorts	:	4 (156)
Volume :	60.46	$\times 10^6$ m^3	% Crown Land	:	1

WATER CHEMISTRY 1982

Total Phosphorus (µg/l)	:	9	Alkalinity (mg/l)	134
Total Nitrogen (µg/l)	:	394	Colour	14

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.9	2.9	2.7	3.1	3.3	3.0	3.2	3.4			
Min. Secchi (m)	2.3	2.1	2.4	2.4	2.7	1.8	2.4	2.4			
Mean Chloro. (µg/l)	1.5	2.2	2.3	2.3	2.0	2.1	2.4	1.6			
Max. Chloro. (µg/l)	2.5	3.0	3.4	5.2	3.1	3.5	4.2	2.3			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)
June 27	3.4	1.3
July 4	2.4	1.5
July 18	2.3	1.2
July 26	2.6	2.0
Aug. 2	2.4	2.4
Aug. 8	2.4	2.5
Aug. 15	2.9	1.6
Sept. 6	2.9	2.0
Sept. 13	3.5	1.9
Oct. 2	3.5	2.5
Oct. 17	3.2	2.0
Oct. 23	3.4	1.2
Oct. 30	3.0	1.3
Mean	2.92	1.80
Std. dev.	0.46	0.48

Date	Secchi (m)	Chloro. (µg/l)
#2		
May 16	3.0	
June 2	2.9	1.0
June 26	3.2	1.0
July 1	3.4	1.1
July 7	3.0	1.3
July 18	2.7	1.0
July 24	2.3	1.0
Aug. 7	2.4	1.5
Aug. 14	2.6	1.2
Aug. 22	2.7	1.3
Sept. 5	3.0	1.9
Sept. 12	3.6	0.6
Mean	2.90	1.17
Std. dev.	0.39	0.33

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Otty	Lanark	North Burgess, North Elmsley
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	47.9	km^2	Shoreline	:	35.4 km
Surface Area :	625	ha	Cottages	:	336 + 41 houses
Maximum Depth:	27.4	m	Resorts	:	3 (27)
Volume :	56.41	$\times 10^6 m^3$	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	16	Alkalinity (mg/l)	95
Total Nitrogen (µg/l)	:	485	Colour	10

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1971[2]
Mean Secchi (m)	4.7	3.9	4.5	4.4	4.2	4.0	4.5	4.4	3.8	4.1	3.2
Min. Secchi (m)	3.9	3.0	3.8	3.3	3.5	3.1	3.2	3.4	2.8	3.0	
Mean Chloro. (µg/l)	2.2	2.2	2.7	2.1	2.1	1.7	1.8	2.1	1.1	1.9	2.2
Max. Chloro. (µg/l)	3.7	3.2	3.8	2.8	2.7	2.6	4.3	3.3	2.2	3.8	

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Station A			Station B		
June 20	4.6	1.8	June 20	4.4	2.5
June 27	4.6	1.3	June 27	4.4	1.5
July 5	5.0	2.5	July 5	4.9	2.2
July 13	5.0	1.8	July 13	4.7	1.5
July 19	4.8	2.6	July 19	4.9	1.6
July 26	5.0	1.4	July 26	5.2	2.0
Aug. 3	5.3	2.5	Aug. 3	5.1	3.0
Aug. 16	5.1	2.5	Aug. 9	4.0	1.4
Aug. 23	4.4	2.5	Aug. 15	4.6	2.0
Aug. 30	4.5	2.6	Aug. 23	4.3	2.3
Sept. 6	4.6	3.0	Aug. 30	3.9	2.7
Sept. 12	4.4	1.5	Sept. 6	4.7	3.7
			Sept. 12	4.5	1.6
Mean	4.78	2.17			
Std. dev.	0.30	0.57	Mean	4.58	2.15
			Std. dev.	0.39	0.68

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Patterson LAKE		Lanark COUNTY		Dalhousie TOWNSHIP(S)	
Watershed Area:	17.1	km^2	Shoreline :	11.27	km
Surface Area :	141	ha	Cottages :	63 + 1	house
Maximum Depth:	15.85	m	Resorts :	0	
Volume :	6.02	$\times 10^6$ m^3	% Crown Land :	10	

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	:	18	Alkalinity (mg/l)	90
Total Nitrogen (µg/l)	:	496	Colour	18

	1982	1981	1980[2]	1979	1978[1]	1977[1]	1976	1975	1974	1973	1972
Mean Secchi (m)	4.9		4.5		4.9	5.2					
Min. Secchi (m)	3.6		2.7		4.6	5.2					
Mean Chloro. (µg/l)	1.5		2.7		1.4	1.5					
Max. Chloro. (µg/l)	2.4		3.7		1.1	1.5					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 9	4.0				
May 16	4.0	1.7			
May 23	6.1	1.1			
May 30	5.8	0.8			
June 6	4.0	1.6			
June 13	3.8	2.0			
June 20	4.9	1.1			
July 4	4.3	1.4			
July 11	3.6	1.5			
July 18	4.3	1.7			
July 27	4.3	1.7			
Aug. 2	4.6	1.9			
Aug. 8	5.5	1.4			
Aug. 12	5.2				
Aug. 15	5.8	1.2			
Aug. 22	4.9	2.1			
Aug. 29	5.2	2.4			
Sept. 6	4.6	2.0			
Sept. 19	5.5	2.4			
Sept. 26	5.5				
Oct. 3	4.9	0.9			
Oct. 11	5.8	1.2			
Oct. 14	6.1	1.0			
Oct. 24	5.2				
Oct. 31	5.5	0.6			
Mean	4.94	1.51			
Std. dev.	0.75	0.51			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Paugh LAKE		Renfrew COUNTY		Burns, Sherwood TOWNSHIP(S)	
Watershed Area:	75	km^2	Shoreline :	18	km
Surface Area :	713	ha	Cottages :	77	
Maximum Depth:	51.8	m	Resorts :	1 (7)	
Volume :	100	$\times 10^6$ m^3	% Crown Land :	80	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	:	10	Alkalinity (mg/l)	9
Total Nitrogen (µg/l)	:	218	Colour	10

	1982	1981	1980	1979	1978	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	5.2	5.3	5.2			5.4					
Min. Secchi (m)	4.6	4.6	4.7			4.0					
Mean Chloro. (µg/l)	0.9	1.3	1.5			1.0					
Max. Chloro. (µg/l)	1.5	2.9	2.1			1.6					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 30	5.0	0.9			
July 4	5.0	0.6			
July 17	4.7	0.8			
July 30	4.6	1.5			
Aug. 22	4.6	1.3			
Sept. 19	5.3	1.2			
Sept. 26	5.6	0.8			
Oct. 3	5.6	0.8			
Oct. 11	5.9	0.8			
Oct. 24	5.6	0.4			
Mean	5.19	0.91			
Std. dev.	0.47	0.33			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Pike	Lanark, Leeds	North Burgess, North Crosby
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	60.0	km^2	Shoreline	:	22.1 km
Surface Area :	316	ha	Cottages	:	143 (1974)
Maximum Depth:	32.6	m	Resorts	:	1 (7)
Volume :	26.58	$\times 10^6$ m^3	% Crown Land	:	0

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	20	Alkalinity (mg/l)	48.6
Total Nitrogen (µg/l)	:	463	Colour	15

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.5	3.7	3.8	3.7	4.2	3.1	2.4	3.9			
Min. Secchi (m)	2.1	2.7	3.2	1.7	2.7	2.1	2.0	2.6			
Mean Chloro. (µg/l)	3.6	3.6	4.3	4.0	2.8	4.0	4.4	3.4			
Max. Chloro. (µg/l)	6.6	7.8	12.0	5.2	4.0	8.2	8.0	5.5			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
#1			#2		
July 7	2.7	2.8	May 9	2.1	2.6
July 18	2.4	3.8	May 30	3.0	3.0
July 23	2.1	3.0	June 27	2.1	3.1
July 27	2.1	6.6	Sept. 26	2.4	3.0
July 29	2.1	5.5	Oct. 17	4.0	0.8
Aug. 17	2.1	6.6			
Aug. 31	3.0	2.9	Mean	2.72	2.50
Sept. 11	2.7	2.5	Std. dev.	0.80	0.97
Mean	2.40	4.21			
Std. dev.	0.36	1.75			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Red Horse (West)	Leeds	Rear of Leeds & Lansdowne
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	330	km^2	Shoreline	:	km
Surface Area :	167	ha	Cottages	:	18 (1976)
Maximum Depth:	37	m	Resorts	:	0
Volume :	-	$\times 10^6 m^3$	% Crown Land	:	0

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	:	25	Alkalinity (mg/l)	119
Total Nitrogen (µg/l)	:	486	Colour	12

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.8	3.4	3.4	3.4				3.7			
Min. Secchi (m)	3.4	2.7	2.1	2.3				2.4			
Mean Chloro. (µg/l)	2.6	5.0	6.1	4.4				4.0			
Max. Chloro. (µg/l)	3.6	6.4	14	5.3				5.8			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 6	3.2	4.0			
June 20	3.0	4.2			
July 4	3.7				
July 12	3.2	2.7			
July 18	3.7	3.0			
July 25	4.0	3.1			
Aug. 5	3.4	2.9			
Aug. 8	3.8	3.6			
Aug. 15	4.0	2.8			
Sept. 5	3.6	3.1			
Sept. 12	4.0	1.7			
Sept. 19	5.2	2.2			
Sept. 25	5.0	1.1			
Oct. 3	4.3	2.1			
Oct. 10	3.7	3.4			
Oct. 24	3.4	2.1			
Mean	3.83	2.60			
Std. dev.	0.61	0.72			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Robertson LAKE		Lanark COUNTY		Lavant TOWNSHIP(S)	
Watershed Area:	3.8	km^2	Shoreline :	8.2	km
Surface Area :	64	ha	Cottages :	38 + 13 houses	
Maximum Depth:	30.5	m	Resorts :	1 (12)	
Volume :	3.80	$\times 10^6$ m^3	% Crown Land :	5	

WATER CHEMISTRY 19

Total Phosphorus (µg/l)	:	6	Alkalinity (mg/l)	73.72
Total Nitrogen (µg/l)	:	308	Colour	11

	1982	1981	1980	1979[1]	1978[2]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	6.4	6.7	5.9	6.9	6.4	6.5					
Min. Secchi (m)	5.8	5.6	4.3	6.7	5.0	4.3					
Mean Chloro. (µg/l)	0.9	1.0	2.4	2.4	1.5	1.3					
Max. Chloro. (µg/l)	2.1	1.2	4.5	1.1	2.4	2.4					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)
#1		
July 14	6.7	1.2
July 16	6.1	0.8
July 20	5.9	1.0
July 23	6.2	0.6
July 27	5.3	0.9
Aug. 3	5.8	1.0
Aug. 11	6.7	0.5
Aug. 23	5.8	2.1
Aug. 28	7.5	1.5
Sept. 14	5.6	0.5
Oct. 5	6.7	0.8
Oct. 14	6.7	0.7
Mean	6.25	0.97
Std. dev.	0.62	0.46

Date	Secchi (m)	Chloro. (µg/l)
#2		
July 9	6.6	1.0
July 30	5.9	
Sept. 10	6.9	
Sept. 21	7.5	0.6
Sept. 29	6.7	0.8
Mean	6.72	0.80
Std. dev.	0.58	0.20

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

St. Andrews LAKE		Frontenac COUNTY		Hinchinbrooke TOWNSHIP(S)	
Watershed Area:	2.8	km^2	Shoreline :	7.6	km
Surface Area :	79	ha	Cottages :		
Maximum Depth:	15.8	m	Resorts :		
Volume :		$\times 10^6 m^3$	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978[1]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	2.8	1.7	1.8		1.9	1.8					
Min. Secchi (m)	1.7	1.2	1.0		1.7	1.3					
Mean Chloro. (µg/l)	2.6	8.2	10.5		5.9	6.8					
Max. Chloro. (µg/l)	4.5	11.0	15		9.0	15.2					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 15	1.8	2.9			
May 23	1.7	3.2			
June 5	2.0	4.5			
June 26	3.2	1.5			
July 4	3.7	1.2			
July 11	2.9	1.9			
July 17	3.5	1.7			
July 25	2.9	1.8			
Aug. 2	2.9				
Aug. 8	3.2	3.5			
Aug. 15	3.2	3.5			
Aug. 21	2.9	3.7			
Oct. 17	2.6	1.9			
Mean	2.81	2.61			
Std. dev.	0.63	1.06			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

St. Peter LAKE		Hastings COUNTY		McLure TOWNSHIP(S)	
Watershed Area:	67	km^2	Shoreline :	13.2	km
Surface Area :	234	ha	Cottages :	182	
Maximum Depth:	28.7	m	Resorts :	10 (301)	
Volume :	17.78	$\times 10^6$ m^3	% Crown Land :	10	

WATER CHEMISTRY 1978

Total Phosphorus (µg/l)	:	7	Alkalinity (mg/l)	10
Total Nitrogen (µg/l)	:	325	Colour	19

	1982[1]	1981	1980	1979	1978[2]	1977[2]	1976	1975	1974	1973	1972
Mean Secchi (m)	3.6		3.2	3.5	3.9	4.8	3.8				
Min. Secchi (m)			2.7	3.0	2.8	3.0	2.6				
Mean Chloro. (µg/l)			2.2	2.0	1.6	1.1	1.8				
Max. Chloro. (µg/l)			3.1	2.9	2.2	2.0	2.9				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Station 1			Station 2		
Aug. 12	4.0		Aug. 12	3.2	

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Salmon Trout LAKE		Hastings COUNTY		Monteagle TOWNSHIP(S)	
Watershed Area:	9.25	km^2	Shoreline :	7.9	km
Surface Area :	100	ha	Cottages :	70	
Maximum Depth:	14.0	m	Resorts :	0	
Volume :	3.80	$\times 10^6$ m^3	% Crown Land :	21	

WATER CHEMISTRY 1977

Total Phosphorus (µg/l)	:	17	Alkalinity (mg/l)	18.15
Total Nitrogen (µg/l)	:	406	Colour	10

	1982	1981	1980	1979	1978	1977[1]	1976	1975	1974	1973	1972
Mean Secchi (m)	3.7	3.5	3.3	3.2	4.2	3.5	3.4	3.0[1]	3.7		
Min. Secchi (m)	2.4	2.7	2.4	2.4	3.2	3.1	2.2	1.1	3.2		
Mean Chloro. (µg/l)	2.4	3.7	11.7	7.4	5.0	3.8	6.6	7.9[1]	1.4		
Max. Chloro. (µg/l)	6.1	9.0	21.0	16	6.9	5.1	10.0	21.0	3.0		

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 20	4.4	2.5			
June 27	4.1	6.1			
July 5	3.7	2.7			
July 18	2.4	1.3			
July 26	3.4	2.9			
Aug. 5	3.2	3.4			
Sept. 12	3.5	1.1			
Oct. 9	4.6	1.2			
Oct. 24	4.0	0.7			
Mean	3.70	2.43			
Std. dev.	0.67	1.67			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Sharbot (East Basin) LAKE		Frontenac COUNTY		Olden TOWNSHIP(S)	
Watershed Area:	129	km^2	Shoreline :	44.3	km
Surface Area :	824	ha	Cottages :	66 + 17	permanent
Maximum Depth:	31.1	m	Resorts :	5 (30)	
Volume :	40.57	$\times 10^6$ m^3	% Crown Land :		

WATER CHEMISTRY 1979

Total Phosphorus (µg/l)	:	13	Alkalinity (mg/l)	81
Total Nitrogen (µg/l)	:	334	Colour	15

	1982	1981[1]	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	3.7	4.0	3.6	3.0	2.7			4.5			
Min. Secchi (m)	3.4	3.5	2.9	2.3	2.1			2.5			
Mean Chloro. (µg/l)	1.7	2.2	3.2	2.0	1.9			2.6			
Max. Chloro. (µg/l)	2.4	3.3	5.4	3.3	2.5			3.1			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)
July 4	3.5	1.2
July 13	3.8	2.1
July 21	4.0	2.2
July 24	4.5	1.6
Aug. 1	3.4	2.1
Aug. 9	3.4	2.4
Aug. 15	3.6	1.8
Aug. 22	3.8	1.8
Mean	3.75	1.90
Std. dev.	0.37	0.38

Date	Secchi (m)	Chloro. (µg/l)
McCrimmon Bay		
Aug. 16	3.4	1.4
Aug. 22	3.8	2.0
Aug. 29	3.8	2.0
Sept. 12	3.7	1.1
Sept. 26	4.1	0.9
Mean	3.76	1.48
Std. dev.	0.25	0.51

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Sharbot (West Basin) LAKE		Frontenac COUNTY		Olden TOWNSHIP(S)
Watershed Area:	88.27	km^2	Shoreline :	31.38 km
Surface Area :	684	ha	Cottages :	155 + 27 houses
Maximum Depth :	31.0	m	Resorts :	2 (25)
Volume :	55.32	$\times 10^6 m^3$	% Crown Land :	5

WATER CHEMISTRY 1979

Total Phosphorus (µg/l)	: 13	Alkalinity (mg/l)	67
Total Nitrogen (µg/l)	: 334	Colour	-

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	4.5	4.7	4.3	4.4	4.8	4.2	4.1	4.4			
Min. Secchi (m)	3.7	4.0	3.7	3.7	4.3	3.4	3.4	3.0			
Mean Chloro. (µg/l)	1.8	2.1	2.4	1.9	1.8	1.7	2.0	2.7			
Max. Chloro. (µg/l)	3.8	3.1	3.3	3.1	2.7	3.5	3.6	5.3			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 2	4.0	3.8			
June 16	3.7	2.1			
June 30	4.9	1.3			
July 14	4.9	0.9			
July 28	4.9	1.5			
Aug. 11	4.6	1.9			
Aug. 25	3.7	2.0			
Sept. 8	5.2	1.1			
Mean	4.49	1.82			
Std. dev.	0.60	0.91			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Sheldrake LAKE	Lennox & Addington COUNTY	Anglesea TOWNSHIP(S)

Watershed Area:	8.36	km^2	Shoreline	: 12.6	km
Surface Area :	186	ha	Cottages	: 27	
Maximum Depth:	4.6	m	Resorts	: 0	
Volume :	2.96	$\times 10^6$ m^3	% Crown Land	: 60	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	:	14	Alkalinity (mg/l)	7.35
Total Nitrogen (µg/l)	:	449	Colour	17

	1982[1]	1981	1980	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	2.8						3.0				
Min. Secchi (m)	2.3						2.6				
Mean Chloro. (µg/l)	1.5						2.1				
Max. Chloro. (µg/l)	2.1						3.9				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Aug. 7	2.3	2.1			
Aug. 15	2.6				
Aug. 22	2.7	1.7			
Aug. 29	2.7	1.1			
Sept. 9	3.8				
Sept. 19	bottom	1.1			
Mean	2.82	1.50			
Std. dev.	0.57	0.49			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Silver LAKE	Frontenac, Lanark COUNTY	Oso, South Sherbrooke TOWNSHIP(S)

Watershed Area:	29.7	km^2	Shoreline	:	9.2 km
Surface Area :	246	ha	Cottages	:	87 + 1 house
Maximum Depth:	24.4	m	Resorts	:	3 (185)
Volume :	24.91	$\times 10^6 m^3$	% Crown Land	:	10

WATER CHEMISTRY 1979

Total Phosphorus (µg/l)	:	11	Alkalinity (mg/l)	93
Total Nitrogen (µg/l)	:	372	Colour	-

	1982	1981	1980	1979[2]	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	4.1	3.6	3.4	4.0	3.5	3.5		3.7			
Min. Secchi (m)	3.0	3.0	2.8	2.9	3.0	2.6		2.9			
Mean Chloro. (µg/l)	1.6	2.0	2.4	1.8	1.8	1.6		1.7			
Max. Chloro. (µg/l)	2.2	2.9	7.0	2.7	2.8	2.4		2.6			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 26	4.9	1.5			
June 8	5.0	1.4			
June 19	4.6	1.4			
June 27	6.1	1.4			
July 4	4.8	1.5			
July 20	3.2	1.7			
July 25	3.0	1.3			
Aug. 3	3.9	2.1			
Aug. 12	3.8	0.9			
Aug. 15	4.3	1.7			
Aug. 23	3.5	2.2			
Aug. 28	3.3	2.2			
Sept. 2	3.3				
Sept. 12	3.5	0.9			
Sept. 25	3.7	1.5			
Oct. 5	4.0	1.6			
Mean	4.06	1.60			
Std. dev.	0.84	0.36			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Skootamatta - Upper Lake (West Basin)	Lennox & Addington	Anglesea
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	49.34	km^2	Shoreline	:	km
Surface Area :	456	ha	Cottages	:	36 (1974)
Maximum Depth:	29.3	m	Resorts	:	0
Volume :		$\times 10^6$ m^3	% Crown Land	:	

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	17	Alkalinity (mg/l)	9.2
Total Nitrogen (µg/l)	:	363	Colour	20

	1982[1]	1981	1980[1]	1979	1978	1977	1976	1975[2]	1974[2]	1973	1972
Mean Secchi (m)	4.0		3.6					3.7	4.2		
Min. Secchi (m)	3.0		3.4					3.0			
Mean Chloro. (µg/l)	2.3		2.1					3.5	2.0		
Max. Chloro. (µg/l)	2.8		1.5					6.5			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 20	3.0	2.8			
Aug. 3	4.7	1.9			
Aug. 17	4.4	2.1			
Mean	4.03	2.27			
Std. dev.	0.91	0.47			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Skootamatta - Lower Lake (East Basin)	Lennox & Addington	Anglesea
LAKE	COUNTY	TOWNSHIP(S)

Watershed Area:	131.54	km^2	Shoreline	:	km
Surface Area :	829	ha	Cottages	:	216 (1974)
Maximum Depth:	25.3	m	Resorts	:	3 (37)
Volume :		$\times 10^6 m^3$	% Crown Land	:	

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	30	Alkalinity (mg/l)	9.2
Total Nitrogen (µg/l)	:	401	Colour	15

	1982[1]	1981	1980	1979	1978	1977	1976	1975[2]	1974[2]	1973	1972
Mean Secchi (m)	3.7		3.6					3.8	4.4		
Min. Secchi (m)	3.2		3.4					3.0			
Mean Chloro. (µg/l)	1.9		2.2					3.5	1.7		
Max. Chloro. (µg/l)	1.9		3.0					6.6			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 20	3.2	1.9			
July 27	4.0	1.7			
Aug. 4	3.8	1.9			
Aug. 10	3.6	1.9			
Aug. 17	4.0	1.9			
Mean	3.72	1.86			
Std. dev.	0.33	0.09			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Sydenham LAKE		Frontenac COUNTY		Loughborough TOWNSHIP(S)	
Watershed Area:	49	km^2	Shoreline :	42	km
Surface Area :	451	ha	Cottages :		
Maximum Depth:	37	m	Resorts :		
Volume :		$\times 10^6 m^3$	% Crown Land :		

WATER CHEMISTRY 19

Total Phosphorus (µg/l) : 34 Alkalinity (mg/l) 111
Total Nitrogen (µg/l) : 501 Colour

	1982[1]	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	3.7		4.2	3.6	3.6	5.0					
Min. Secchi (m)	3.2		3.4	2.6	3.2	3.8					
Mean Chloro. (µg/l)	2.4		3.2	3.0	2.1	3.4					
Max. Chloro. (µg/l)	3.3		3.7	5.2	3.1	5.3					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
June 28	3.2	1.8			
July 15	3.8				
July 30	4.3	3.3			
Aug. 13	3.6	1.6			
Aug. 26	3.8	3.0			
Mean	3.74	2.42			
Std. dev.	0.40	0.85			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Troy LAKE		Leeds COUNTY		South Crosby TOWNSHIP(S)	
Watershed Area:	8.17	km^2	Shoreline :	8.5	km
Surface Area :	119	ha	Cottages :	16 (1974)	
Maximum Depth:	5.2	m	Resorts :	0	
Volume :	2.74	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	23	Alkalinity (mg/l)	58
Total Nitrogen (µg/l)	:	413	Colour	15

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972
Mean Secchi (m)	2.4	2.3	2.3	2.0	1.9	1.7		2.1			
Min. Secchi (m)	1.2	2.1	1.5	1.2	1.2	1.2		1.4			
Mean Chloro. (µg/l)	5.6	4.2	6.7	8.0	7.4	6.9		6.2			
Max. Chloro. (µg/l)	20.3	6.3	13	17.2	13.9	15.6		12.0			

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 2	3.0	1.7			
May 9	3.4	2.4			
May 15	4.3	2.1			
May 24	3.7	2.1			
June 12	2.7	4.8			
June 20	2.4	4.0			
June 27	2.7	3.0			
July 4	3.0	2.0			
July 18	2.1	4.2			
Aug. 15	1.8	6.8			
Aug. 18	1.5	11.7			
Aug. 29	1.3	20.3			
Sept. 12	1.5	2.2			
Oct. 3	1.2	9.3			
Oct. 10	1.8	7.4			
Mean	2.43	5.60			
Std. dev.	0.94	5.06			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Twin Sister (East Basin) LAKE		Hastings COUNTY		Marmora TOWNSHIP(S)	
Watershed Area:	6.9	km^2	Shoreline :	4.4	km
Surface Area :	51	ha	Cottages :	20	
Maximum Depth:	8.54	m	Resorts :	0	
Volume :	1.74	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	: 22	Alkalinity (mg/l)	64
Total Nitrogen (µg/l)	: 490	Colour	18

	1982	1981[1]	1980[2]	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	3.4	3.5	3.9								
Min. Secchi (m)	2.7	3.2	3.2								
Mean Chloro. (µg/l)	1.5	3.3	3.5								
Max. Chloro. (µg/l)	2.7	3.3	6.2								

1 based on less than 6 measurements
2 includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Aug. 22	4.6	1.6			
Aug. 28	3.8	2.2			
Sept. 6	2.7	2.7			
Sept. 11	3.4	2.5			
Sept. 19	3.7	0.7			
Sept. 26	3.4	0.8			
Oct. 3	3.0	1.2			
Oct. 10	3.0	1.3			
Oct. 23	2.7	0.9			
Mean	3.37	1.54			
Std. dev.	0.61	0.75			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Twin Sister (West Basin) LAKE		Hastings COUNTY		Marmora TOWNSHIP(S)	
Watershed Area:	8.7	km^2	Shoreline :	3.2	km
Surface Area :	35	ha	Cottages :	21	
Maximum Depth:	13.4	m	Resorts :	0	
Volume :	1.96	$\times 10^6$ m^3	% Crown Land :	0	

WATER CHEMISTRY 1980

Total Phosphorus (µg/l)	:	18	Alkalinity (mg/l)	59
Total Nitrogen (µg/l)	:	470	Colour	13

	1982	1981	1980[2]	1979	1978	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	3.6	4.4	3.9			3.6					
Min. Secchi (m)	3.2	3.3	3.5			2.7					
Mean Chloro. (µg/l)	2.2	1.9	2.9			1.9					
Max. Chloro. (µg/l)	3.1	4.2	6.4			3.7					

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
July 4	3.8	2.3			
July 11	3.5	3.0			
July 25	3.8	2.7			
Aug. 2	3.2	2.4			
Aug. 15	3.5	2.4			
Aug. 31	4.2	3.1			
Oct. 16	3.4	0.9			
Oct. 30	3.4	0.6			
Mean	3.60	2.18			
Std. dev.	0.32	0.93			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

Upper Rock LAKE		Frontenac COUNTY	Storrington TOWNSHIP(S)
Watershed Area:	14.84	km^2	Shoreline : - km
Surface Area :	77	ha	Cottages : 14 (1974)
Maximum Depth:	-	m	Resorts :
Volume :	-	$\times 10^6$ m^3	% Crown Land :

WATER CHEMISTRY 19

Total Phosphorus (µg/l) :
Total Nitrogen (µg/l) :
Alkalinity (mg/l)
Colour

	1982	1981	1980	1979	1978[1]	1977	1976	1975	1974	1973	1972
Mean Secchi (m)	3.8				3.2						
Min. Secchi (m)	2.9				3.0						
Mean Chloro. (µg/l)	3.2				2.1						
Max. Chloro. (µg/l)	5.0				1.2						

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
May 30	2.9	5.0			
June 13	3.8	3.9			
June 27	4.7	4.9			
July 11	4.1				
July 25	4.3	1.6			
Aug. 8	4.3	3.8			
Aug. 22	3.0	2.1			
Sept. 5	3.3	2.6			
Sept. 19	4.4	2.9			
Oct. 3	3.7	2.4			
Mean	3.85	3.24			
Std. dev.	0.62	1.22			

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

White LAKE	Lanark & Renfrew COUNTY	Darling, Bagot & McNab TOWNSHIP(S)

Watershed Area:	211	km^2	Shoreline :	97.8	km
Surface Area :	2269	ha	Cottages :	449 + 5 permanent	
Maximum Depth:	9.2	m	Resorts :	10 (508)	
Volume :	74.74	$\times 10^6 m^3$	% Crown Land :	50	

WATER CHEMISTRY 1975

Total Phosphorus (µg/l)	:	22	Alkalinity (mg/l)	101
Total Nitrogen (µg/l)	:	469	Colour	10

	1982	1981	1980	1979	1978	1977	1976	1975[2]	1974	1973	1972[1]
Mean Secchi (m)	2.4	2.6	2.7	3.0	3.2	2.8	2.3	3.2	3.0	2.6	1.8
Min. Secchi (m)	1.8	1.8	1.7	2.4	2.4	1.9	1.3	2.4	2.1	1.6	1.6
Mean Chloro. (µg/l)	3.4	3.2	5.3	3.0	3.7	3.6	6.4	3.8	2.2	4.3	4.8
Max. Chloro. (µg/l)	10.1	8.6	23.5	6.7	9.2	6.7	20.1	6.2	4.9	10.5	9.0

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
Station A			Station B		
May 27	3.0	0.6	May 27	3.2	
June 3	2.9	1.2	June 3	3.0	1.0
June 10	2.7	3.3	June 10	3.0	3.1
June 16	2.4	3.4	June 16	2.6	2.8
June 23	2.2		June 23	2.4	1.3
June 30	2.3	3.5	June 30	2.4	3.5
July 8	2.4	1.9	July 8	2.4	2.5
July 15	2.4	2.6	July 15	2.7	3.6
July 22	2.4	3.9	July 22	2.7	3.3
July 27	1.8	4.2	July 27	2.4	2.2
Aug. 5	2.1	4.3	Aug. 5	2.2	4.0
Aug. 12	2.1	4.5	Aug. 12	2.3	3.2
Aug. 18	2.3	7.4	Aug. 18	2.4	7.3
Aug. 26	1.8	8.0	Aug. 26	1.8	10.1
Sept. 1	2.0	5.9	Sept. 1	2.0	7.2
Sept. 8	2.3	1.8	Sept. 8	2.1	2.7
Sept. 15	2.3	1.8	Sept. 15	2.3	1.3
Sept. 24	2.3	2.5	Sept. 24	2.3	2.2
Sept. 30	2.4	1.5	Sept. 30	2.6	1.7
Oct. 6	3.0	1.0	Oct. 6	3.4	1.2
Mean	2.36	3.33	Mean	2.51	3.38
Std. dev.	0.34	2.07	Std. dev.	0.40	2.38

SELF-HELP PROGRAM
SOUTHEASTERN REGION
1982

White LAKE | Frontenac COUNTY | Bedford TOWNSHIP(S)

Watershed Area:	9.94	km^2	Shoreline :	9.7	km
Surface Area :	185	ha	Cottages :	61 + 1	house
Maximum Depth:	25.0	m	Resorts :	1 (35)	
Volume :	15.45	$\times 10^6 m^3$	% Crown Land :	0	

WATER CHEMISTRY 1976

Total Phosphorus (µg/l)	:	12	Alkalinity (mg/l)	113
Total Nitrogen (µg/l)	:	378	Colour	5

	1982[1]	1981	1980	1979	1978	1977	1976[2]	1975	1974	1973	1972
Mean Secchi (m)	2.4						4.2				
Min. Secchi (m)							2.7				
Mean Chloro. (µg/l)	0.6						2.0				
Max. Chloro. (µg/l)							6.1				

[1] based on less than 6 measurements
[2] includes Recreational Lake Survey Program data

Date	Secchi (m)	Chloro. (µg/l)	Date	Secchi (m)	Chloro. (µg/l)
S. Basin					
Aug. 8	2.4	0.6			
Mean	2.4	0.6			

PROTECTION OF THE LAKE

Of the few management options available for dealing with water quality problems the most effective is prevention. Nitrogen and phosphorus have been identified as critical elements in eutrophication. The near-shore region of a watershed contributes a disproportionate share of phosphorus and nitrogen relative to its area because of its proximity to the lake. It is important that cottagers and other waterfront owners do everything possible to ensure that their activities do not allow these nutrients to reach the lake. Following is a list of suggestions:

1) New cottage construction and septic systems should be sited well back from the water. This practice allows algae producing nutrients in runoff and seepage from tile beds to be absorbed by soil and vegetation. Setbacks have the additional advantage of preserving the scenic beauty of the shore by preventing development from intruding unnaturally on the lake.

2) Site preparation and building activities should be carried out in a manner which will minimize disruption to the soil and vegetation. All areas that are exposed during construction should be re-planted as soon as possible to prevent runoff and erosion.

3) Sewage disposal systems must be in compliance with Provincial Regulations and properly maintained. Seepage of leachate from improperly located or malfunctioning septic tank fields is suspected of contributing significant quantities of phosphorus to some heavily cottaged lakes. Septic tanks should be pumped out every three years and the area over the tile bed should be grassed and left open to sun and wind to encourage evapotranspiration. If a problem with the system is apparent, for example ponding; or suspected; contact the local District Office of the Ministry of the Environment for guidance.

4) Minimize the quantity of water used for domestic purposes to avoid overloading the septic system. Dishwashers and automatic washing machines use large quantities of water. Moreover, a dishwasher detergent contains a high amount of phosphates which should be avoided for cottage use. Laundry should be taken to the city.

5) Do not fertilize lawns. Excessive fertilizer will wash off into the lake and may promote unwanted nuisance aquatic growths.

6) The shallow near-shore or "littoral" zone supports most of the plants and animal life found in the lake. Disruption of any part of this ecosystem threatens the entire cycle of life in the lake. In particular, habitat for fish and other wildlife may be destroyed. Before undertaking any shoreline activites such as dredging or filling, contact a Ministry of Natural Resources for advice. In fact, prior approval may be required under the Navigable Waters Protection Act or the Fisheries Act.

7) Remember that these efforts to protect the lake will result in increased enjoyment by all.

ONTARIO

TERMINAL STREAM: ONTARIO L.

DATE	ISSUED TO
	Martin